Compaq 325 and 326 Notebook PCs
HP 425 and 625 Notebook PCs

Maintenance and Service Guide

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Safety warning notice

⚠ **WARNING!** To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to contact the skin or a soft surface, such as pillows or rugs or clothing, during operation. The computer and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950).

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1 Product description

Category	Description	Compaq 325 model, UMA graphics, RS880M chipset	Compaq 326 model, Discrete graphics, RS880MD chipset	HP 425/625 models, UMA graphics, RS880M chipset
Product Name	Compaq 325 Notebook PC	√		
	Compaq 326 Notebook PC		√	
	HP 425 Notebook PC			√
	HP 625 Notebook PC			√
Processors	AMD processors			
	AMD Turion™ II Dual-Core P520 2.30-GHz with 2-MB L2 cache	√	√	√
	AMD Athlon™ II Dual-Core P320 2.1-GHz with 2-MB L2 cache	√	√	√
	AMD Phenom II Champlain P820 25-W	√	√	√
	AMD V-Series Single-Core V120 2.2-GHz with 2-MB L2 cache	√	√	√
Chipsets	AMD RS880M, UMA	√		√
	AMD RS880MD, Discrete		√	
	AMD SB820, Southbridge	√	√	√
Graphics	AMD Universal Memory Architecture (UMA) graphics subsystem integrated with shared video memory (dynamically allocated)	√		√
	Discrete graphics AMD M93S3–LP with Hypermemory support, 512MB (64MX16) x 4		√	
	ATI Mobility Radeon HD 4200	√		√
	ATI Mobility Radeon HD 4350 with 512-MB memory		√	
Panels	All display assemblies support privacy filter	√	√	√

Category	Description	Compaq 325 model, UMA graphics, RS880M chipset	Compaq 326 model, Discrete graphics, RS880MD chipset	HP 425/625 models, UMA graphics, RS880M chipset
	33.8-cm (13.3-in) HD LED backlight panel: • 1366×768 AntiGlare • 1366×768 AntiGlare with webcam • 1366×768 BrightView • 1366×768 BrightView with Webcam	√	√	√
	35.6-cm (14.0-in) HD LED backlight panel: • 1366×768 AntiGlare • 1366×768 AntiGlare with webcam • 1366×768 BrightView • 1366×768 BrightView with Webcam	√	√	√
	39.6-cm (15.6-in) HD LED backlight panel: • 1366×768 AntiGlare • 1366×768 AntiGlare with webcam • 1366×768 BrightView • 1366×768 BrightView with Webcam	√	√	√
Memory	2 customer-accessible/upgradable memory module slots	√	√	√
	Supports dual-channel memory	√	√	√
	Supports up to 8 GB of system RAM	√	√	√
	PC3-10600, 1333-MHz, DDR3	√	√	√

Category	Description	Compaq 325 model, UMA graphics, RS880M chipset	Compaq 326 model, Discrete graphics, RS880MD chipset	HP 425/625 models, UMA graphics, RS880M chipset
	Supports the following configurations in all countries and regions: • 8192-MB total system memory (4096-MB x 2, dual-channel) • 4096-MB total system memory (4096-MB × 1) • 4096-MB total system memory (2048-MB× 2, dual-channel) • 3072-MB total system memory (2048-MB + 1024-MB, dual-channel) • 2048-MB total system memory (2048-MB × 1) • 2048-MB total system memory (1024-MB × 2, dual-channel) • 1024-MB total system memory (1024-MB × 1)	√	√	√
Hard drives	Supports 9.5-mm, 6.35-cm (2.50-in) hard drives	√	√	√
	Customer-accessible	√	√	√
	Serial ATA	√	√	√
	Supports the following drives: • 500-GB, 7200-rpm • 500-GB, 5400-rpm • 320-GB, 7200-rpm • 320-GB, 5400-rpm • 250-GB, 7200-rpm • 250-GB, 5400-rpm • 160-GB, 7200-rpm • 160-GB, 5400-rpm	√	√	√
	HP DriveGuard (not available on Linux)	√	√	√
Optical drives	Fixed, no modular requirements	√	√	√
	SATA 12.7-mm tray load	√	√	√
	Supports option of no optical drive	√	√	√

Category	Description	Compaq 325 model, UMA graphics, RS880M chipset	Compaq 326 model, Discrete graphics, RS880MD chipset	HP 425/625 models, UMA graphics, RS880M chipset
	Supports the following drives: • DVD-ROM Drive • DVD±RW Drive with Lightscribe	√	√	√
Diskette drive	Supports external USB diskette drive only	√	√	√
Audio/Visual	IDT 92HD88	√	√	√
	Integrated microphone	√	√	√
	Single speaker	√	√	√
	Headphone and microphone jacks	√	√	√
	Integrated 2MP camera with fixed focus (select models only)	√	√	√
Modem	56K V.92 3.8 cm (1.5-in) data/fax modem	√	√	√
	Supports no modem option	√	√	√
	For use in all countries and regions except APJ	√		√
	For use in APJ only	√	√	√
	Modem cable not included	√	√	√
Ethernet	10/100 Ethernet network interface card (NIC)	√	√	√
	S3/S4/S5 wake on LAN: AC only mode	√	√	√
	Ethernat cable not included	√	√	√
Wireless	**Integrated WLAN options by way of MiniPCI card:**			
	2 WLAN antennas built into display assembly	√	√	√
	Supports option for no-WLAN	√	√	√
	Ethernet cable not included	√	√	√
	Support for the following WLAN formats: • Broadcom 802.11b/g • Broadcom 802.11b/g/n (1 x 1) • Atheros 802.11 b/g/n (1 x 1) • Realtek 802.11 b/g/n (1 x 1)	√	√	√
	Integrated wireless personal area network (WPAN) options by way of Bluetooth® module:			

Category	Description	Compaq 325 model, UMA graphics, RS880M chipset	Compaq 326 model, Discrete graphics, RS880MD chipset	HP 425/625 models, UMA graphics, RS880M chipset
	Support option for no-WPAN	√	√	√
	Bluetooth 2.1	√	√	√
External media cards	One ExpressCard/34-mm	√	√	√
	Media Card Reader supporting Secure Digital (SD) Memory Card, Secure Digital High Capacity (SDHC) Memory Card, MultiMediaCard (MMC) formats	√	√	√
Ports	Audio-in (microphone)	√	√	√
	Audio-out (stereo headphone)	√	√	√
	RJ-11 (modem)	√	√	√
	RJ-45 (Ethernet, includes link and activity lights)	√	√	√
	USB 2.0 (3)	√	√	√
	HP non-Smart adapter	√	√	√
	VGA (Dsub 15-pin) supporting 1600 × 1200 external resolution at 75-GHz (hot plug/ unplug with auto-detect)	√	√	√
	Power adapter jack (2–pin non-smart adapter)	√	√	√
	HDMI	√	√	√
Keyboard/pointing devices	**39.6-cm** (15.6-in) keyboard with TouchPad	√	√	√
	35.6-cm (14.0-in)/**33.8-cm** (13.3-in) keyboard with TouchPad	√	√	√
	Supports 2-way scroll with legend and gestures (taps enabled as default)	√	√	√
Power requirements	65-W non-Smart AC adapter with localized cable plug support (3-wire plug with ground pin)	√		√
	90-W non-Smart AC adapter with localized cable plug support (3-wire plug with ground pin)		√	
	6-cell, 47-Wh Li-ion battery	√	√	√
	9-cell, 93-Wh Li-ion battery	√	√	√
Security	Supports Kensington security lock	√	√	√

Category	Description	Compaq 325 model, UMA graphics, RS880M chipset	Compaq 326 model, Discrete graphics, RS880MD chipset	HP 425/625 models, UMA graphics, RS880M chipset
Operating system	**Preinstalled with Microsoft Office:**	√	√	√
	Windows 7 Home Premium 32 with Office 2007 Ready (excludes Japan)	√	√	√
	Windows 7 Home Premium with Office 2007 Ready — EDGI	√	√	√
	Windows 7 Home Premium 32 with Office 2007 Personal (Japan only)	√	√	√
	Windows 7 Home Premium 32 with Office 2007 Personal with PowerPoint (Japan only)	√	√	√
	Windows 7 Home Premium 32 with Office 2007 Professional (Japan only)	√	√	√
	Windows 7 Professional 32 with Office 2007 Ready (excludes Japan)	√	√	√
	Windows 7 Professional with Office 2007 Ready – EDGI	√	√	√
	Windows 7 Professional 32 with Office 2007 Personal (Japan only)	√	√	√
	Windows 7 Professional 32 with Office 2007 Personal with PowerPoint (Japan only)	√	√	√
	Windows 7 Professional 32 with Office 2007 Professional (Japan only)	√	√	√
	Windows 7 Professional 32 with XP Pro images with Office 2007 Ready (excludes Japan)	√	√	√
	Windows 7 Professional 32 with XP Pro images with Office 2007 Ready – EDGI	√	√	√
	Windows 7 Professional 32 with XP Pro images with Office 2007 Personal (Japan only)	√	√	√
	Windows 7 Professional 32 with XP Pro images with Office 2007 Personal with PowerPoint (Japan only)	√	√	√
	Windows 7 Professional 32 with XP Pro images with Office 2007 Professional (Japan only)	√	√	√
	Windows Vista Home Basic 32 with Office 2007 Ready (excludes Japan)	√	√	√
	Windows Vista Home Basic 32 with Office 2007 Personal (Japan only)	√	√	√

Category	Description	Compaq 325 model, UMA graphics, RS880M chipset	Compaq 326 model, Discrete graphics, RS880MD chipset	HP 425/625 models, UMA graphics, RS880M chipset
	Windows Vista Home Basic 32 with Office 2007 Personal and PowerPoint (Japan only)	√	√	√
	Windows Vista Home Basic 32 with Office 2007 Professional (Japan only)	√	√	√
	Windows 7 Starter with Office 2007 Ready	√	√	√
	Windows 7 Starter 32 with Office 2007 Ready – EDGI	√	√	√
	Windows 7 Home Basic 32 with Office 2007 Ready (excludes Japan)	√	√	√
	Windows 7 Home Basic 32 with Office 2007 Ready and 1 year McCaffee (People's Republic of China only)	√	√	√
	Windows 7 Home Basic with Office 2007 Ready – EDGI	√	√	√
	Preinstalled with Microsoft Basics:			
	Windows 7 Professional 32 (Japan only)	√	√	√
	Windows 7 Home Premium 32 (Japan only)	√	√	√
	Windows Vista Home Basic 32 (Japan only)	√	√	√
	Windows 7 Professional 32 (with XP Pro images) (Japan only)	√	√	√
	Preinstalled:			
	FreeDOS	√	√	√
	RedFlag Linux (People's Republic of China only)	√	√	√
	SuSE Linux	√	√	√
	Restore media:			
	Windows 7 Home Basic 32	√	√	√
	Windows 7 Home Premium 32	√	√	√
	Windows 7 Home Premium 64	√	√	√
	Windows XP Pro	√	√	√
	Windows 7 Starter	√	√	√
	Windows Vista Basic 32	√	√	√
	Windows 7 Professional 32	√	√	√

Category	Description	Compaq 325 model, UMA graphics, RS880M chipset	Compaq 326 model, Discrete graphics, RS880MD chipset	HP 425/625 models, UMA graphics, RS880M chipset
	Windows 7 Professional 64	√	√	√
	DRDVD Windows 7 – Home Premium/Pro	√	√	√
	DRDVD Windows 7 – Starter/Home Basic	√	√	√
	Windows XP Professional	√	√	√
	SRDVD SuSE Linux	√	√	√
	Red Flag Linux (People's Republic of China only)	√	√	√
	DRDVD Windows XP Pro	√	√	√
	Windows Vista Office Ready DVD	√	√	√
	Certified:			
	Microsoft® WHQL	√	√	√
	SuSE Linux	√	√	√
	Web Support:			
	All Windows Vista 64 versions	√	√	√
	Windows 7 Professional 64 versions	√	√	√
	SuSE Linux	√	√	√
Serviceability	**End-user replaceable parts:**			
	AC adapter	√	√	√
	Battery (system)	√	√	√
	Hard drive	√	√	√
	Memory module	√	√	√
	Keyboard	√	√	√
	Optical drive	√	√	√
	WLAN module	√	√	√

2 External component identification

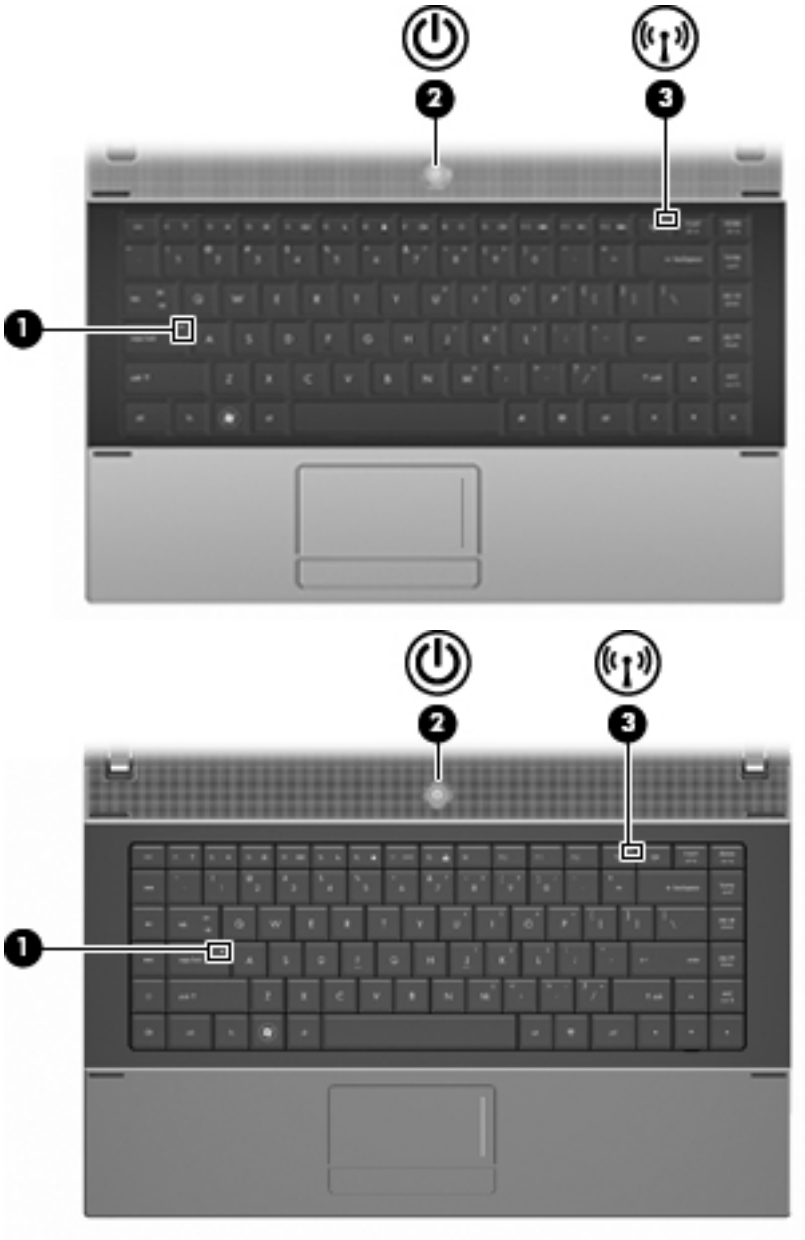
Top components

TouchPad

Component		Description
(1)	TouchPad	Moves the pointer and selects or activates items on the screen.
(2)	TouchPad button	The left and right sides of the single button function like the left and right buttons on an external mouse.
(3)	TouchPad scroll zone	Scrolls up or down.

Lights

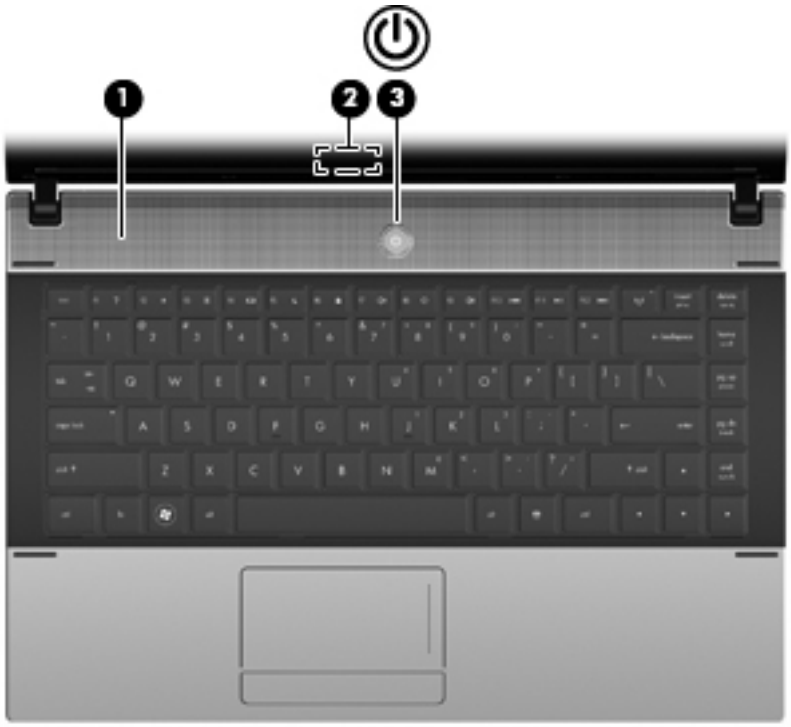
NOTE: Refer to the illustration that most closely matches your computer.



Component		Description
(1)	Caps lock light	On: Caps lock is on.

Component		Description
(2)	Power light	• On: The computer is on. • Blinking: The computer is in the Sleep state in Windows 7 or Windows Vista, or in Standby in Windows XP. • Off: The computer is off or in Hibernation.
(3)	Wireless light	• White: An integrated wireless device, such as a wireless local area network (WLAN) device is on. • Amber: All wireless devices are off.

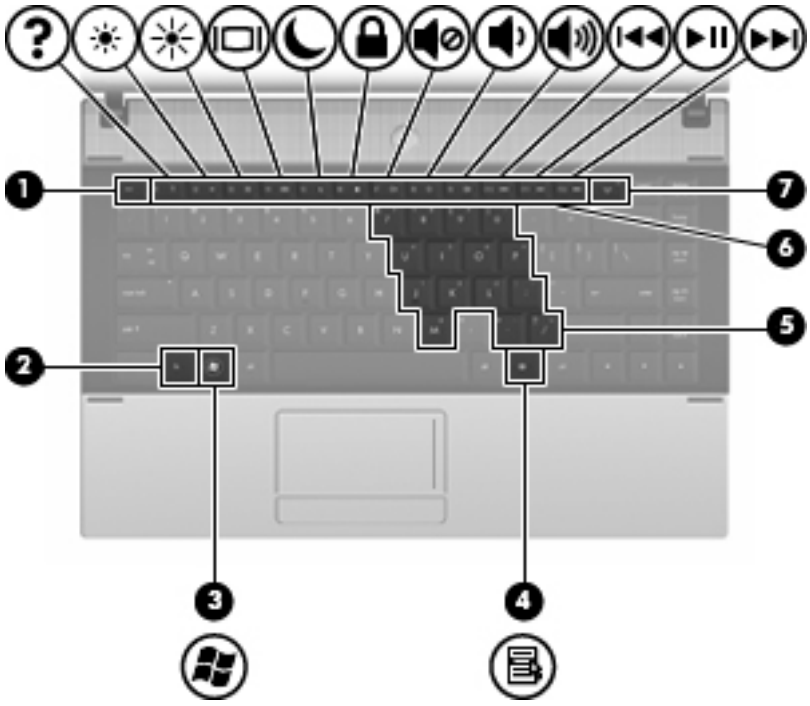
Buttons, switch, and speaker



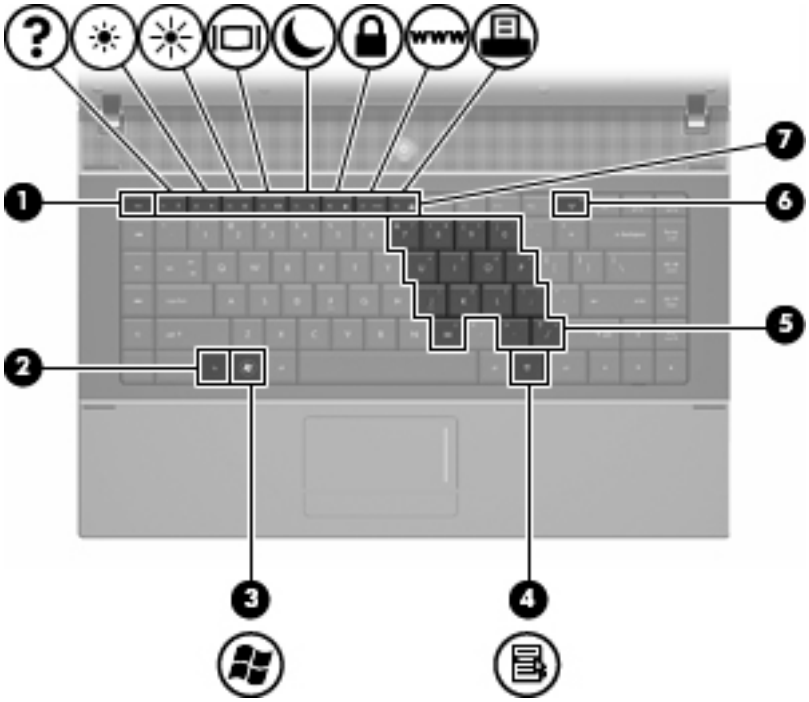
Component		Description
(1)	Speaker	Produces sound.
(2)	Internal display switch	Turns off the display if the panel lid is closed while the power is on.
(3)	Power button	• When the computer is off, press the button to turn on the computer. • When the computer is on, press the button to shut down the computer. • When the computer is in the Sleep state or in Standby, press the button briefly to exit Sleep or Standby. • When the computer is in Hibernation, press the button briefly to exit Hibernation. If the computer has stopped responding and Windows shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer.

Keys

NOTE: Refer to the illustration and table that most closely matches your computer.



Component		Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with a function key or the esc key.
(3)	Windows logo key	Displays the Windows Start menu.
(4)	Windows applications key	Displays a shortcut menu for items beneath the cursor.
(5)	Embedded numeric keypad keys	Can be used like the keys on an external numeric keypad when pressed in combination with the fn and num lk keys.
(6)	Function keys	Execute frequently used system functions when pressed in combination with the fn key.
(7)	Wireless key	Because the wireless devices are enabled at the factory, use the wireless key to turn on or turn off the wireless devices simultaneously.



Component		Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
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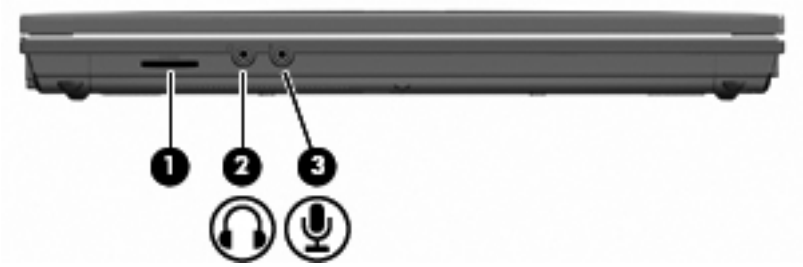
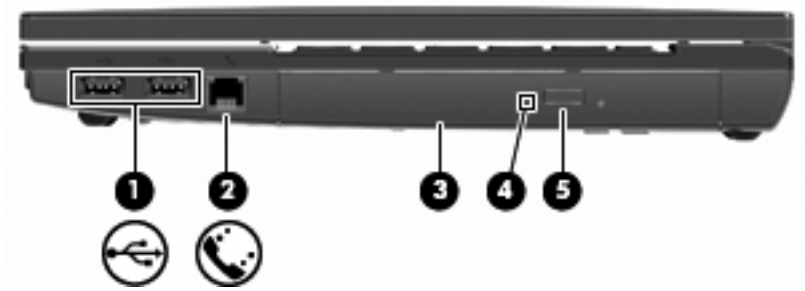
(3)	Windows logo key	Displays the Windows Start menu.
(4)	Windows applications key	Displays a shortcut menu for items beneath the cursor.
(5)	Embedded numeric keypad keys	Can be used like the keys on an external numeric keypad when pressed in combination with the fn and num lk keys.
(6)	Wireless key	Because the wireless devices are enabled at the factory, use the wireless key to turn on or turn off the wireless devices simultaneously.
(7)	Function keys	Execute frequently used system functions when pressed in combination with the fn key.

Front components



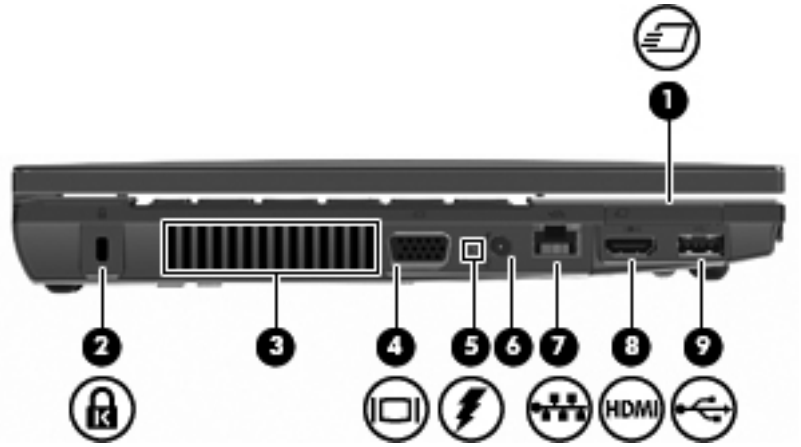
Component		Description
(1)	SD Card Reader	Supports the following optional digital card formats: • MultiMediaCard (MMC) • MultiMediaCard 4.2 (MMC Plus, including MMC Plus HC) • Secure Digital (SD) Memory Card • Secure Digital High Capacity (SDHC) Memory Card • Secure Digital High Speed (SDHS) Memory Card
(2)	Audio-out (headphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio. **NOTE:** When a device is connected to the headphone jack, the computer speakers are disabled.
(3)	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.

Right-side components



Component		Description
(1)	USB ports (2)	Connect optional USB devices.
(2)	RJ-11 (modem) jack (select models only)	Connects a modem cable.
(3)	Optical drive (select models only)	Reads optical discs and, on select models, also writes to optical discs.
(4)	Optical drive light (select models only)	Blinking: The optical drive is being accessed.
(5)	Optical drive button (select models only)	Opens optical drive tray.

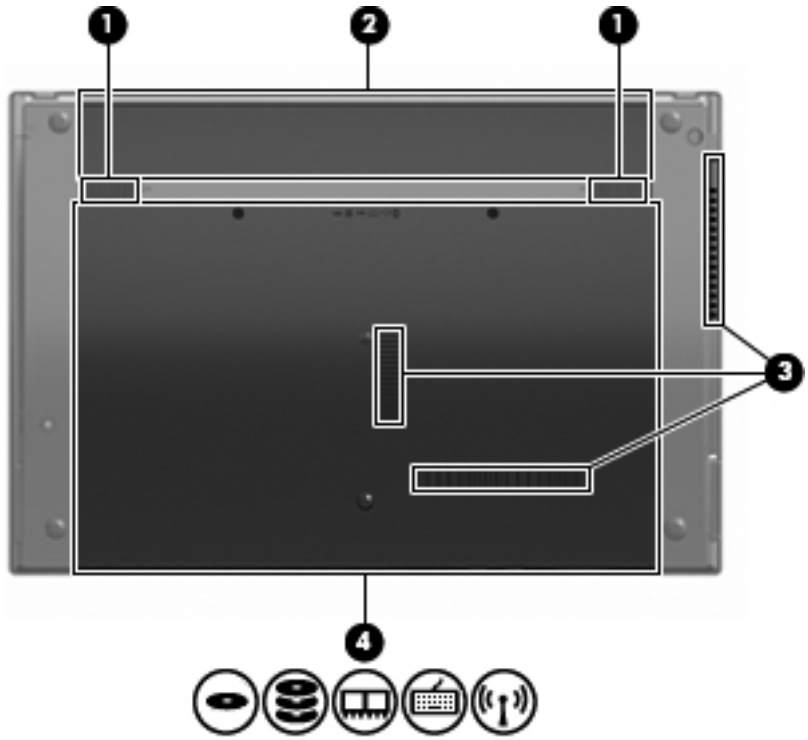
Left-side components

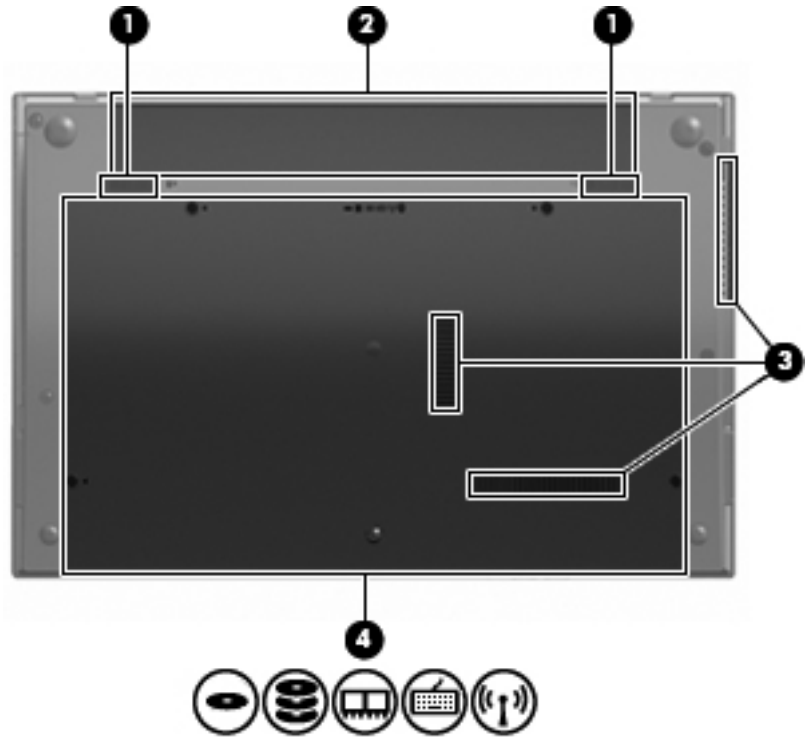


Component		Description
(1)	ExpressCard slot	Supports optional ExpressCards.
(2)	Security cable slot	Attaches an optional security cable to the computer. **NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(3)	Vent	Enables airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(4)	External monitor port	Connects an external VGA monitor or projector.
(5)	Battery light	• Amber: A battery is charging. • Turquoise: A battery is close to full charge capacity. • Blinking amber: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly. • Off: If the computer is plugged into an external power source, the light turns off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source the light stays off until the battery reaches a low battery level.
(6)	Power connector	Connects an AC adapter.
(7)	RJ-45 (network) jack	Connects a network cable.
(8)	HDMI port	Connects an optional HDMI device.
(9)	USB port (1)	Connects optional USB devices.

Bottom components

NOTE: Refer to the illustration that most closely matches your computer.

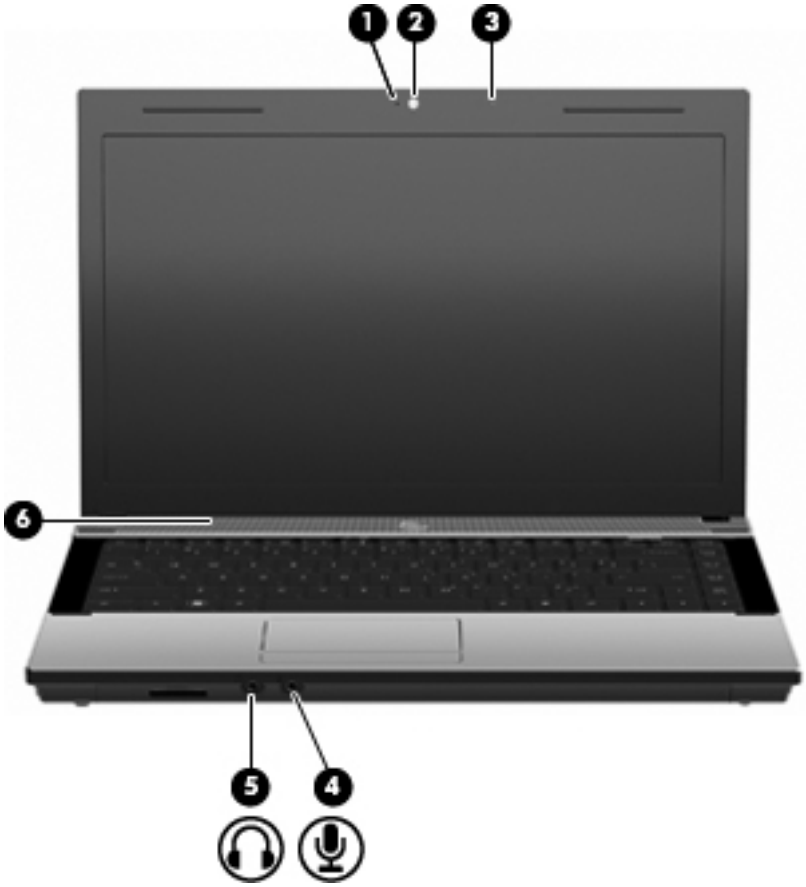




Component		Description
(1)	Battery release latches (2)	Release the battery from the battery bay.

Component		Description
(2)	Battery bay	Holds the battery.
(3)	Vents (3)	Enable airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(4)	Memory module compartment	Contains the memory module slots.
	WLAN module compartment	Contains the wireless LAN module slot. **CAUTION:** To prevent an unresponsive system and the display of a warning message, replace the WLAN module with only a module authorized for use in the computer by the governmental agency that regulates wireless devices in your country. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact technical support through Help and Support.
	Hard drive bay	Holds the hard drive.

Multimedia components



Component		Description
(1)	Webcam light (select models only)	On: The webcam is in use.
(2)	Webcam (select models only)	Records video and captures still photographs.
(3)	Integrated microphone	Records sound.
(4)	Audio-out (headphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio. **NOTE:** When a device is connected to the headphone jack, the computer speakers are disabled.
(5)	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
(6)	Speaker	Produces sound.

Wireless antennas (select models only)

On select computer models, at least 2 antennas send and receive signals from one or more wireless devices. These antennas are not visible from the outside of the computer.

NOTE: For optimal transmission, keep the areas immediately around the antennas free from obstructions.

Component	Description
WLAN antennas (2)*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).

*The antennas are not visible from the outside of the computer.

To see wireless regulatory notices, refer to the section of the *Regulatory, Safety and Environmental Notices* that applies to your country or region. These notices are located in Help and Support.

Additional hardware components

Component		Description
(1)	Power cord*	Connects an AC adapter to an AC outlet.
(2)	AC adapter	Converts AC power to DC power.
(3)	Battery*	Powers the computer when the computer is not plugged into external power.

*Batteries and power cords vary in appearance by country or region.

3 Illustrated parts catalog

Service tag

When ordering parts or requesting information, provide the computer serial number and model description provided on the service tag.

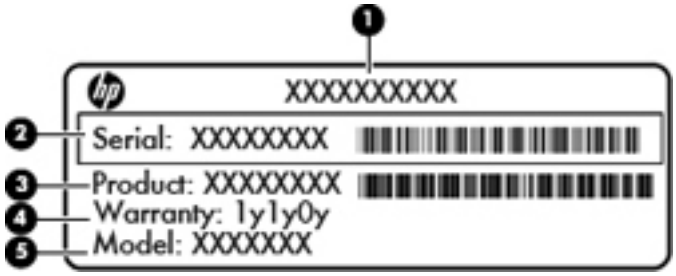
(1) Product name: This is the product name affixed to the front of the computer.

(2) Serial number (s/n): This is an alphanumeric identifier that is unique to each product.

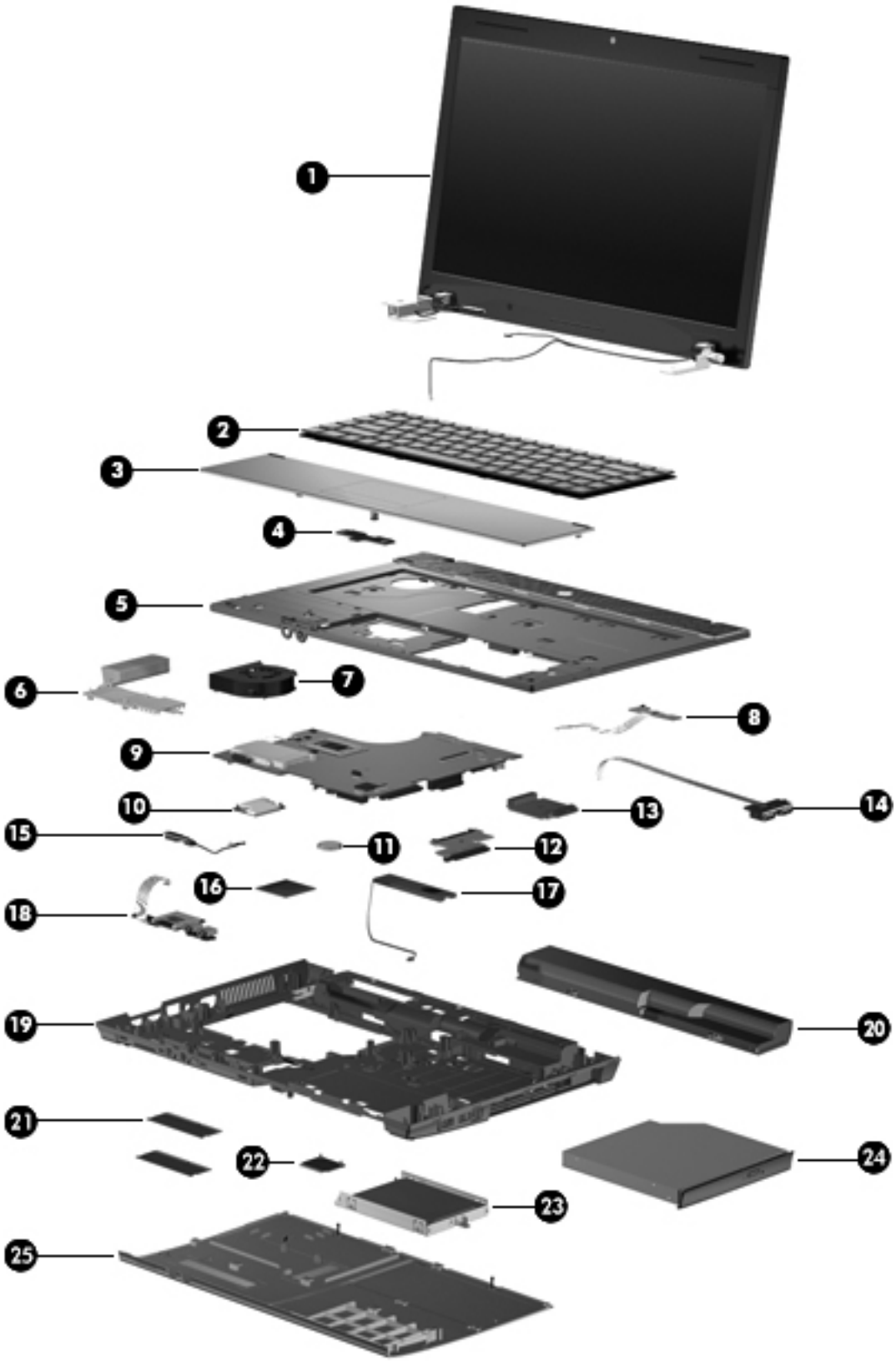
(3) Product number (p/n): This is an alphanumeric identifier that provides specific information about the hardware components. The product number helps a service technician to determine what components and parts are needed.

(4) Warranty period: This number describes the duration (in years) of the warranty period for this computer.

(5) Model description: This is an alphanumeric identifier used to locate documents, drivers, and support for your computer.



Computer major components



Item	Description	
(1)	**Display assembly** (includes microphone, 2 WLAN antenna transceivers and cables and, on select computer models, 2 WWAN antenna transceivers and cables)	
	39.6-cm (15.6-in) HD AntiGlare display assembly for use in computers equipped without webcam (1366×768 resolution)	605801-001
	39.6-cm (15.6-in) HD AntiGlare display assembly for use in computers equipped with webcam (1366×768 resolution)	605802-001
	39.6-cm (15.6-in) HD BrightView display assembly for use in computers without webcam (1366×768 resolution)	605803-001
	39.6-cm (15.6-in) HD BrightView display assembly for use in computers with webcam (1366×768 resolution)	605804-001
	35.6-cm (14.0-in) HD AntiGlare display assembly for use in computers without webcam (1366×768 resolution)	605805-001
	35.6-cm (14.0-in) HD AntiGlare display assembly for use in computers equipped with webcam (1366×768 resolution)	605806-001
	35.6-cm (14.0-in) HD BrightView display assembly for use in computers without webcam (1366×768 resolution)	605807-001
	35.6-cm (14.0-in) HD BrightView display assembly for use in computers equipped with webcam (1366×768 resolution)	605808-001
	33.8-cm (13.3-in) HD AntiGlare display assembly for use in computers with WLAN but without webcam (1366×768 resolution)	605809-001
	33.8-cm (13.3-in) HD AntiGlare display assembly for use in computers with WLAN and webcam (1366×768 resolution)	605810-001
	33.8-cm (13.3-in) HD BrightView display assembly for use in computers with WLAN but without webcam (1366×768 resolution)	605811-001
	33.8-cm (13.3-in) HD BrightView display assembly for use in computers with WLAN and webcam (1366×768 resolution)	605812-001
	33.8-cm (13.3-in) HD AntiGlare display assembly for use in computers with WLAN but without webcam (1366×768 resolution), red	616597-001
	33.8-cm (13.3-in) HD AntiGlare display assembly for use in computers with WLAN and webcam (1366×768 resolution), red	616598-001
	33.8-cm (13.3-in) HD BrightView display assembly for use in computers with WLAN but without webcam (1366×768 resolution), red	616599-001
	33.8-cm (13.3-in) HD BrightView display assembly for use in computers with WLAN and webcam (1366×768 resolution), red	616600-001
(2)	**Keyboard** **NOTE:** For a detailed list of available keyboards, see Sequential part number listing on page 37.	
	For use in **33.8-cm** (13.3-in) and **35.6-cm** (14.0-in) computers	605813-xxx
	For use in **39.6-cm** (15.6-in) computers	605814-xxx
(3)	**Palm rest** (includes TouchPad, TouchPad board, and 2 ribbon cables)	

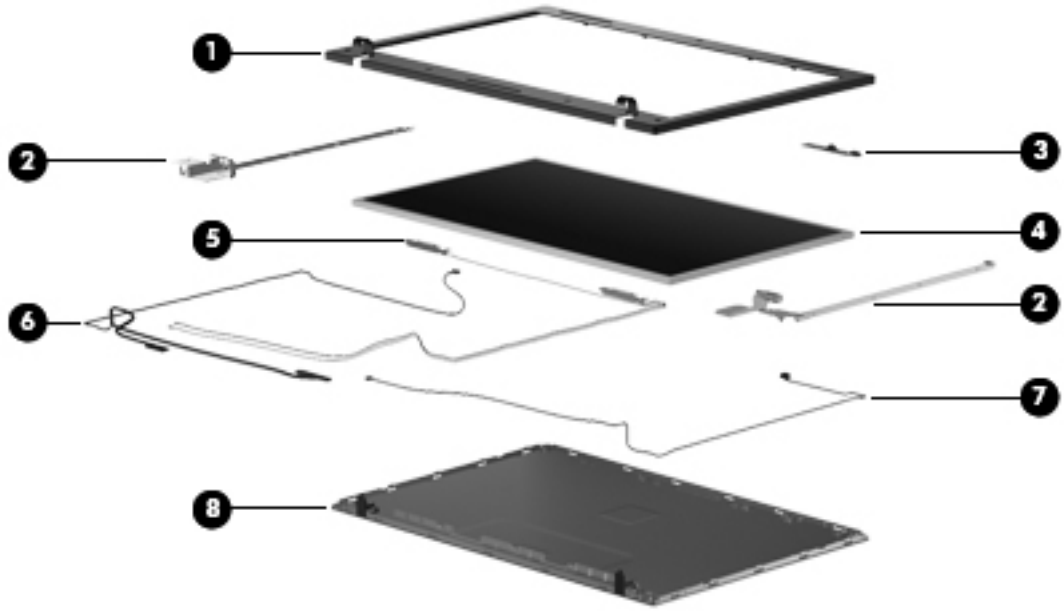
Item	Description	
	For use in Compaq **33.8-cm** (13.3-in) computers	605779-001
	For use in Compaq **33.8-cm** (13.3-in) computers, red	616602-001
	For use in HP **35.6-cm** (14.0-in) computers	605780-001
	For use in HP **39.6-cm** (15.6-in) computers	605782-001
(4)	**TouchPad board**	605795-001
(5)	**Top cover**	
	Top cover for Compaq **33.8-cm** (13.3-in) computers	605774-001
	Top cover for Compaq **33.8-cm** (13.3-in) computers, red	616601-001
	Top cover for HP **35.6-cm** (14.0-in) computers	605775-001
	Top cover for HP **39.6-cm** (15.6-in) computers	605777-001
(6)	**Heat sink**	
	For use in computers with UMA graphics subsystems	611804-001
	For use in computers with discrete graphics subsystems, NB	611805-001
	For use in computers with discrete graphics subsystems, CPU	615355-001
(7)	**Fan**	
	For use in **39.6-cm** (15.6-in) computers	605791-001
	For use in **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers	605787-001
(8)	**Power switch board**	605794-001
(9)	**System board** (includes RTC battery and replacement thermal material)	
	System board with discrete graphics and RTC battery with RS880M chipset	611802-001
	System board with UMA graphics and RTC battery with RS880M chipset	611803-001
(10)	**Modem module** **NOTE:** The modem module spare part kit does not include a modem module cable. The modem module cable is included in the Cable Kit , spare part number 599807-001. See Cables on page 32 for more Cable Kit spare part information.	
	For use in all countries and regions except Australia and New Zealand	510100-001
	For use only in Australia and New Zealand	510100-011
(11)	**RTC battery**	449137-001
(12)	**Hard drive extender for use in 39.6-cm (15.6-in) computers**	605798-001
(13)	**Optical drive extender**	
	For use in **39.6-cm** (15.6-in) computers	605799-001
	For use in **35.6-cm** (14.0-in) computers	605800-001
(14)	**USB board with cable**	605796-001

Item	Description	
	USB board for use on system boards with UMA graphics subsystem	622615-001
(15)	**Bluetooth module**	537921-001
	HP Integrated module with Bluetooth 2.1 wireless technology For use in Andorra, Argentina, Australia, Austria, Bangladesh, Belarus, Belgium, Bermuda, Brazil, Brunei, Bulgaria, Canada, Cayman Islands, Chile, China, Croatia, Cyprus, Czech Republic, Denmark, Egypt, El Salvador, Estonia, Finland, France, Germany, Greece, French Guiana, Guadeloupe, Guam, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Jordan, South Korea, Latvia, Puerto Rico, Liechtenstein, Lithuania, Luxembourg, Malaysia, Malta, Martinique, Mexico, Morocco, Netherlands, New Zealand, Norway, Pakistan, Panama, Peru, Philippines, Poland, Portugal, Romania, Russia, Saudi Arabia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Thailand, Tunisia, Turkey, Ukraine, United Arab Emirates, the United Kingdom, the United States, Venezuela, Virgin Islands	
(16)	**AMD Processor** (includes replacement thermal material) (not illustrated)	
	AMD Turion™ II Dual-Core P520 2.3-GHz with 2-MB L2 cache	594173-001
	AMD Athlon™ II Dual-Core P320 2.1–GHz with 2-MB L2 cache	594165-001
	AMD Phenom II Champlain P820 25W	594167-001
	AMD V-Series Single-Core V120 2.2-GHz with 2-MB L2 cache	594171-001
(17)	**Speaker**	605792-001
(18)	**Audio board**	620608-001
	Audio board for use on system boards with UMA graphics subsystem	622614-001
(19)	**Base enclosure**	
	For use in **33.8-cm** (13.3-in) computers	622191-001
	For use in **35.6-cm** (14.0-in) computers	620609-001
	For use in **39.6-cm** (15.6-in) computers	622192-001
(20)	**Battery**	
	9-cell, 93-Wh, 2.8-Ah	593573-001
	6-cell, 47-Wh, 2.2-Ah	593572-001
(21)	**Memory module**	
	2-GB (PC3-10600, 1333-MHz, DDR3)	598856-001
	1-GB (PC3-10600, 1333-MHz, DDR3)	598859-001
(22)	**WLAN module**	
	Broadcom 4313AGN 802.11a/b/g/draft-n WiFi Adapter	593836-001
	Broadcom 4312G 802.11b/g WiFi adapters:	
	• For use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	504593-003

Item	Description	
	• For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	504593-004
	Atheros 9285G 802.11b/g/n WiFi Adapter for use in all countries and regions	605560-005
	Realtek RTL8191SE 802.11b/g/n WiFi Adapter for use in all countries and regions	593533-001
(23)	**Hard drive** (includes hard drive bracket)	
	500-GB, 7200-rpm	608139-001
	500-GB, 7200-rpm for use in **39.6-cm** (15.6-in) computers	611029-001
	500-GB, 5400-rpm	614958-001
	500-GB, 5400-rpm for use in **39.6-cm** (15.6-in) computers	614956-001
	320-GB, 7200-rpm	608138-001
	320-GB, 7200-rpm for use in **39.6-cm** (15.6-in) computers	611028-001
	320-GB, 5400-rpm	614957-001
	320-GB, 5400-rpm for use in **39.6-cm** (15.6-in) computers	614955-001
	250-GB, 7200-rpm	608137-001
	250-GB, 7200-rpm for use in **39.6-cm** (15.6-in) computers	611027-001
	250-GB, 5400-rpm	493994-001
	250-GB, 5400-rpm for use in **39.6-cm** (15.6-in) computers	614523-001
	160-GB, 7200-rpm	455954-001
	160-GB, 7200-rpm for use in **39.6-cm** (15.6-in) computers	614522-001

Item	Description	
	160-GB, 5400-rpm	615040-001
	160-GB, 5400-rpm for use in **39.6-cm** (15.6-in) computers	615844-001
(24)	**Optical drive** (includes bezel)	
	DVD-ROM Drive	608141-001
	DVD±RW Double-Layer Drive with LightScribe	608140-001
(25)	**Access door**	
	For use in **33.8-cm** (13.3-in) and **35.6-cm** (14.0-in) computers	605784-001
	For use in **39.6-cm** (15.6-in) computers	605785-001

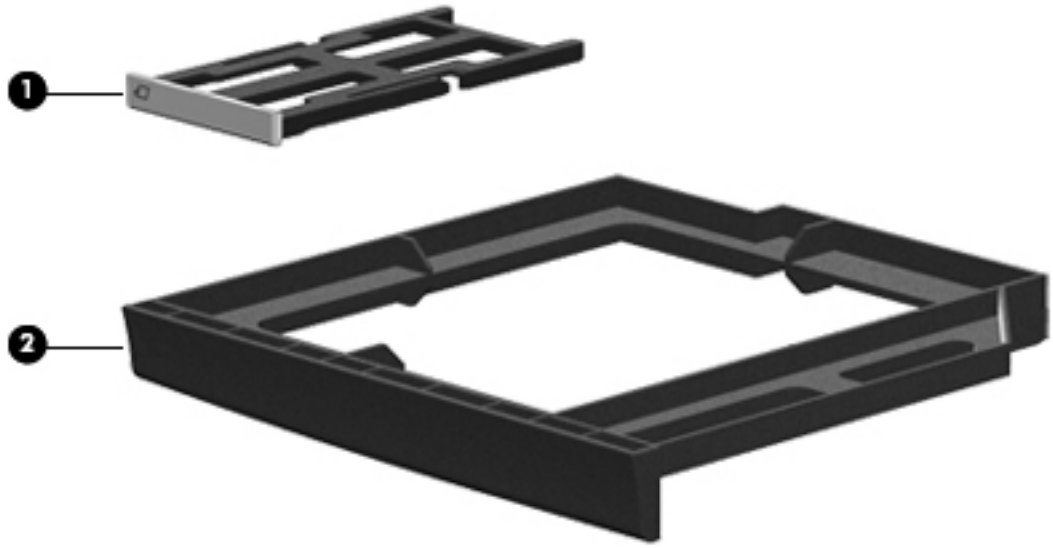
Display assembly components



Item	Description	Spare part number
(1)	**Display bezel**	
	Compaq **33.8-cm** (13.3-in) LCD bezel without webcam	605751-001
	Compaq **33.8-cm** (13.3-in) LCD bezel with webcam	605752-001
	HP **35.6-cm** (14.0-in) LCD bezel without webcam	605753-001
	HP **35.6-cm** (14.0-in) LCD bezel with webcam	605754-001
	HP **39.6-cm** (15.6-in) LCD bezel without webcam	605757-001
	HP **39.6-cm** (15.6-in) LCD bezel with webcam	605758-001
(2)	**Display Hinge Kit**	
	Hinge Kit for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers	605768-001
	Hinge Kit for **39.6-cm** (15.6-in) computers	605769-001
(3)	**Webcam module**	611026-001
(4)	**Display panel**	
	Display panel AntiGlare without webcam for use in **39.6-cm** (15.6-in) computers	605801-001
	Display panel AntiGlare with webcam for use in **39.6-cm** (15.6-in) computers	605802-001
	Display panel BrightView without webcam for use in **39.6-cm** (15.6-in) computers	605803-001
	Display panel BrightView with webcam for use in **39.6-cm** (15.6-in) computers	605804-001
	Display panel AntiGlare without webcam for use in **35.6-cm** (14-in) computers	605805-001
	Display panel AntiGlare with webcam for use in **35.6-cm** (14-in) computers	605806-001

Item	Description	Spare part number
	Display panel BrightView without webcam for use in **35.6-cm** (14-in) computers	605807-001
	Display panel BrightView with webcam for use in **35.6-cm** (14-in) computers	605808-001
	Display panel AntiGlare without webcam for use in **33.8-cm** (13.3-in) computers	605809-001
	Display panel AntiGlare with webcam for use in **33.8-cm** (13.3-in) computers	605810-001
	Display panel BrightView without webcam for use in **33.8-cm** (13.3-in) computers	605811-001
	Display panel BrightView with webcam for use in **33.8-cm** (13.3-in) computers	605812-001
	Display panel AntiGlare without webcam for use in **33.8-cm** (13.3-in) computers, red	616597-001
	Display panel AntiGlare with webcam for use in **33.8-cm** (13.3-in) computers, red	616598-001
	Display panel BrightView without webcam for use in **33.8-cm** (13.3-in) computers, red	616599-001
	Display panel BrightView with webcam for use in **33.8-cm** (13.3-in) computers, red	616600-001
(5)	**WLAN transceiver cable**	spared with display assembly
(6)	**LCD cable**	
	LCD cable with webcam	605767-001
	LCD cable without webcam	605766-001
(7)	**Microphone cable**	
(8)	**Display enclosure**	
	For use in Compaq **33.8-cm** (13.3-in) computers	605761-001
	For use in Compaq **33.8-cm** (13.3-in) computers, red	616596-001
	For use in HP **35.6-cm** (14.0-in) computers	605762-001
	For use in HP **39.6-cm** (15.6-in) computers	605764-001

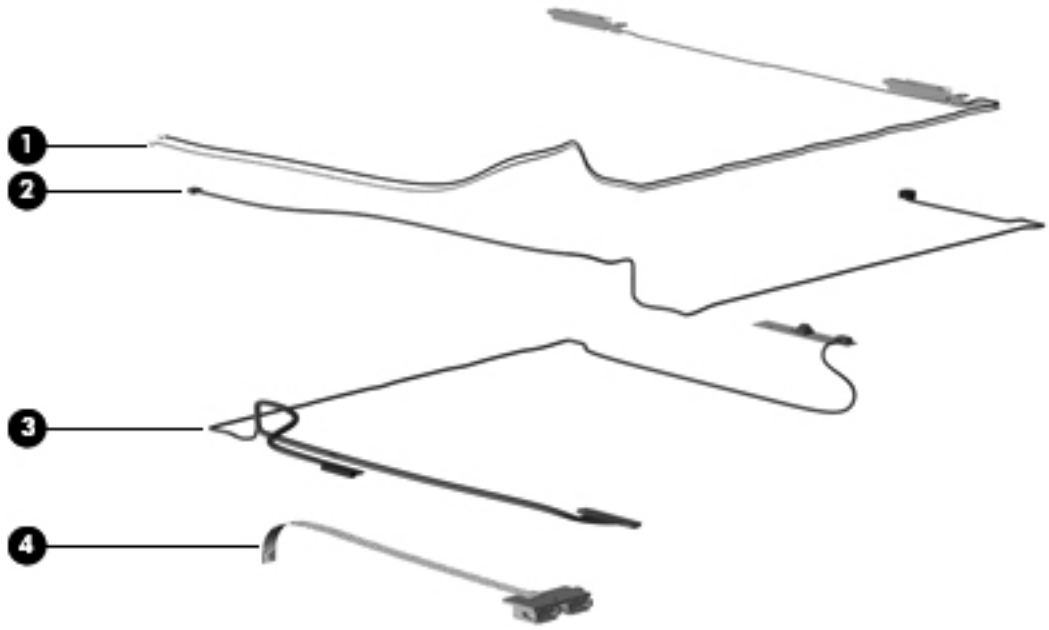
Plastics Kit



Item	Description	Spare part number
	Plastics Kit:	605786-001
(1)	ExpressCard slot bezel	
(2)	Optical drive bezel	

Cables

Item	Description	Spare part number
	Cable Kit , includes:	605793-001
(1)	Bluetooth cable	
(2)	RJ-11 cable	
(3)	Main battery connector	



Item	Description	Spare part number
(1)	**WLAN transceiver with cable**	spared with display assembly
(2)	**Microphone cable**	spared with display assembly
(3)	**LCD Cable Kit**	
	LCD Cable without webcam (not shown)	605766-001
	LCD Cable with webcam cable	605767-001
(4)	**USB cable**	605796-001

Mass storage devices

Item	Description	Spare part number
(1)	**Hard drive** (includes bracket)	
	500-GB, 7200-rpm	608139-001
	500-GB, 7200-rpm for use in **39.6-cm** (15.6-in) computers	611029-001
	500-GB, 5400-rpm	614958–001
	500-GB, 5400-rpm for use in **39.6-cm** (15.6-in) computers	614956-001
	320-GB, 7200-rpm	608138-001
	320-GB, 7200-rpm for use in **39.6-cm** (15.6-in) computers	611028-001
	320-GB, 5400-rpm	614957-001
	320-GB, 5400-rpm for use in **39.6-cm** (15.6-in) computers	614955-001
	250-GB, 7200-rpm	608137-001
	250-GB, 7200-rpm for use in **39.6-cm** (15.6-in) computers	611027-001
	250-GB, 5400-rpm	493994-001
	250-GB, 5400-rpm for use in **39.6-cm** (15.6-in) computers	614523-001
	160-GB, 7200-rpm	455954-001
	160-GB, 7200-rpm for use in **39.6-cm** (15.6-in) computers	614522-001
	160-GB, 5400-rpm	615040-001
	160-GB 5400-rpm for use in **39.6-cm** (15.6-in) computers	615844-001
(2)	**Optical drive** (includes bezel)	

Item	Description	Spare part number
	DVD±RW Double-Layer Drive with LightScribe	608140-001
	DVD-ROM Drive	608141-001

Miscellaneous parts

Description	Spare part number
AC adapters	
65W AC adapter, for use in computer models with UMA graphics	463958-001
65W AC adapter	613152-001
65W AC adapter EM	577170-001
65W AC adapter EM	613161-001
90W PFC AC adapter EM	535593-001
90W PFC AC adapter EM	613160-001
90W PFC AC adapter	613153-001
Power cords	
For use in Argentina	490371-D01
For use in Brazil	490371-201
For use in Denmark	490371-081
For use in Europe, the Middle East, and Africa	490371-021
For use in Israel	490371-BB1
For use in Italy	490371-061
For use in South Africa	490371-AR1
For use in Switzerland	490371-111
For use in the United Kingdom	490371-031
For use in the United States	490371-001
Screw Kit, includes: • (15) Torx 2.5×6.0 screws • (15) Phillips 2.5×4.5 screws • (15) Phillips 2.5×4.5 screws • (15) Phillips 2.5×4.5 screws • (15) Phillips 2.0×3.0 screws • (15) Phillips 3.0×4.5 screws	605790-001
Rubber Kit (contains: 10 top bumper strips, 20 bottom case hinge bumpers, 10 rubber feet, 10 middle body bumpers, 10 RJ-11 bumpers, 10 bottom case bumpers)	
For use in **33.8-cm** (13.3-in) and **35.6-cm** (14.0-in) computers	605789-001
For use in **39.6-cm** (15.6-in) computers	608931-001

Sequential part number listing

Spare part number	Description
449137-001	RTC battery
455954-001	160-GB, 7200-rpm hard drive for use in computers with **35.6-cm** (14-in) or **33.8-cm** (13.3-in) displays
463958-001	65-W AC adapter for use in computers with UMA graphics
490371-001	Power cord for use in the United States
490371-021	Power cord for use in Europe, the Middle East, and Africa
490371-031	Power cord for use in the United Kingdom
490371-061	Power cord for use in Italy
490371-081	Power cord for use in Denmark
490371-111	Power cord for use in Switzerland
490371-201	Power cord for use in Brazil
490371-AR1	Power cord for use in South Africa
490371-BB1	Power cord for use in Israel
490371-D01	Power cord for use in Argentina
493994-001	250-GB, 5400-rpm hard drive for use in computers with **35.6-cm** (14-in) or **33.8-cm** (13.3-in) displays
504593-003	Broadcom BCM4312 802.11b/g WLAN module for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States
504593-004	Broadcom 4312 802.11b/g WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
510100-001	Modem module for use in all countries and regions except Australia and New Zealand
510100-011	Modem module for use in Australia and New Zealand

Spare part number	Description
535593-001	AC adapter 90W PFC
537921-001	Bluetooth module with Bluetooth 2.1 wireless technology
577170-001	AC adapter 65W PFC
593533-001	Realtek RTL8191SE 802.11b/g/n WiFi Adapter
593572-001	Battery, 6-cell, 47 Wh, 2.2 Ah for use in computers with 15.6-in displays
593573-001	Battery, 9-cell, 93 Wh, 2.8 Ah for use in computers with 15.6-in displays
593836-001	Broadcom 4313AGN 802.11a/b/g/draft-n WiFi Adapter
594165-001	AMD Athlon™ II Dual-Core P320 2.1-GHz processor with 2-MB L2 cache
594167-001	AMD Phenom II Champlain P820 25W processor
594171-001	AMD V-Series Single-Core V120 2.2-GHz processor with 2-MB L2 cache
594173-001	AMD Turion II Dual-Core P520 2.3-GHz processor with 2-MB L2 cache
598856-001	2-GB memory (PC3-10600, 1333-MHz, DDR3)
598859-001	1-GB memory (PC3-10600, 1333-MHz, DDR3
605560-005	Atheros 9285G 802.11b/g/n WiFi Adapter
605751-001	Compaq **33.8-cm** (13.3-in) LCD bezel without webcam
605752-001	Compaq **33.8-cm** (13.3-in) LCD bezel with webcam
605753-001	HP **35.6-cm** (14.0-in) LCD bezel without webcam
605754-001	HP **35.6-cm** (14.0-in) LCD bezel with webcam
605757-001	HP **39.6-cm** (15.6-in) LCD bezel without webcam
605758-001	HP **39.6-cm** (15.6-in) LCD bezel with webcam
605761-001	Compaq **33.8-cm** (13.3-in) display enclosure
605762-001	HP **35.6-cm** (14.0-in) display enclosure
605764-001	HP **39.6-cm** (15.6-in) display enclosure
605766-001	LCD cable without webcam
605767-001	LCD cable with webcam
605768-001	Hinge Kit for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers
605769-001	Hinge Kit for **39.6-cm** (15.6-in) computers
605774-001	Top cover for Compaq **33.8-cm** (13.3-in) computers
605775-001	Top cover for HP **35.6-cm** (14.0-in) computers
605777-001	Top cover for HP **39.6-cm** (15.6-in) computers
605779-001	Palm rest with TouchPad for Compaq **33.8-cm** (13.3-in) computers (includes TouchPad board and cable)
605780-001	Palm rest with TouchPad for HP **35.6-cm** (14.0-in) computers (includes TouchPad board and cable)

Spare part number	Description
605782-001	Palm rest with TouchPad for HP **39.6-cm** (15.6-in) computers (includes TouchPad board and cable)
605784-001	Service door for **33.8-cm** (13.3-in) and **35.6-cm** (14.0-in) computers
605785-001	Service door for **39.6-cm** (15.6-in) computers
605786-001	Plastics Kit
605787-001	Fan for use in **33.8-cm** (13.3-in) and **35.6-cm** (14.0-in) computers
605789-001	Rubber Kit for **33.8-cm** (13.3-in) and **35.6-cm** (14.0-in) computers
605790-001	Screw Kit
605791-001	Fan for use in **39.6-cm** (15.6-in) computers
605792-001	Speaker
605793-001	Cable Kit
605794-001	Power switch board
605795-001	TouchPad board
605796-001	USB board
605798-001	Hard drive extender for use in 39.6-cm (15.6-in) computers
605799-001	Optical drive extender for **39.6-cm** (15.6-in) computers
605800-001	Optical drive extender for **35.6-cm** (14.0-in) computers
605801-001	**39.6-cm** (15.6-in) HD AntiGlare display assembly for use in computers equipped without webcam (1366×768 resolution)
605802-001	**39.6-cm** (15.6-in) HD AntiGlare display assembly for use in computers equipped with webcam (1366×768 resolution)
605803-001	**39.6-cm** (15.6-in) HD BrightView display assembly for use in computers without webcam (1366×768 resolution)
605804-001	**39.6-cm** (15.6-in) HD BrightView display assembly for use in computers with webcam (1366×768 resolution)
605805-001	**35.6-cm** (14.0-in) HD AntiGlare display assembly for use in computers without webcam (1366×768 resolution)
605806-001	**35.6-cm** (14.0-in) HD AntiGlare display assembly for use in computers equipped with webcam (1366×768 resolution)
605807-001	**35.6-cm** (14.0-in) HD BrightView display assembly for use in computers without webcam (1366×768 resolution)
605808-001	**35.6-cm** (14.0-in) HD BrightView display assembly for use in computers equipped with webcam (1366×768 resolution)
605809-001	**33.8-cm** (13.3-in) HD AntiGlare display assembly for use in computers with WLAN but without webcam (1366×768 resolution)
605810-001	**33.8-cm** (13.3-in) HD AntiGlare display assembly for use in computers with WLAN and webcam (1366×768 resolution)

Spare part number	Description
605811-001	**33.8-cm** (13.3-in) HD BrightView display assembly for use in computers with WLAN but without webcam (1366×768 resolution)
605812-001	**33.8-cm** (13.3-in) HD BrightView display assembly for use in computers with WLAN and webcam (1366×768 resolution)
605813-001	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in the United States
605813-031	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in the United Kingdom
605813-041	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Germany
605813-051	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in France
605813-061	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Italy
605813-071	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Spain
605813-081	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Denmark
605813-091	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Norway
605813-121	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in French Canada
605813-131	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Portugal
605813-141	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Turkey
605813-161	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Latin America
605813-171	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Saudi Arabia
605813-201	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Brazil
605813-211	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Hungary
605813-251	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Russia
605813-261	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Bulgaria
605813-281	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Thailand
605813-291	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Japan
605813-A41	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Europe
605813-A81	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in the Czech Republic
605813-AB1	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Taiwan
605813-AD1	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in South Korea
605813-B31	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for International use
605813-B71	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Finland
605813-BA1	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Slovenia
605813-BB1	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Israel
605813-BG1	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Switzerland

Spare part number	Description
605813-DD1	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Iceland
605813-DJ1	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in Greece
605813-DW1	Keyboard for **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers for use in the French Arabic region
605814-001	Keyboard for **39.6-cm** (15.6-in) computers for use in the United States
605814-031	Keyboard for **39.6-cm** (15.6-in) computers for use in the United Kingdom
605814-041	Keyboard for **39.6-cm** (15.6-in) computers for use in Germany
605814-051	Keyboard for **39.6-cm** (15.6-in)) computers for use in France
605814-061	Keyboard for **39.6-cm** (15.6-in) computers for use in Italy
605814-071	Keyboard for **39.6-cm** (15.6-in) computers for use in Spain
605814-081	Keyboard for **39.6-cm** (15.6-in) computers for use in Denmark
605814-091	Keyboard for **39.6-cm** (15.6-in) computers for use in Norway
605814-121	Keyboard for **39.6-cm** (15.6-in) computers for use in French Canada
605814-131	Keyboard for **39.6-cm** (15.6-in) computers for use in Portugal
605814-141	Keyboard for **39.6-cm** (15.6-in) computers for use in Turkey
605814-161	Keyboard for **39.6-cm** (15.6-in) computers for use in Latin America
605814-171	Keyboard for **39.6-cm** (15.6-in) computers for use in Saudi Arabia
605814-201	Keyboard for **39.6-cm** (15.6-in) computers for use in Brazil
605814-211	Keyboard for **39.6-cm** (15.6-in) computers for use in Hungary
605814-251	Keyboard for **39.6-cm** (15.6-in)) computers for use in Russia
605814-261	Keyboard for **39.6-cm** (15.6-in) computers for use in Bulgaria
605814-A41	Keyboard for **39.6-cm** (15.6-in) computers for use in Europe
605814-A81	Keyboard for **39.6-cm** (15.6-in) computers for use in the Czech Republic
605814-B31	Keyboard for **39.6-cm** (15.6-in) computers for International use
605814-B71	Keyboard for **39.6-cm** (15.6-in) computers for use in Finland
605814-BA1	Keyboard for **39.6-cm** (15.6-in) computers for use in Slovenia
605814-BB1	Keyboard for **39.6-cm** (15.6-in) computers for use in Israel
605814-BG1	Keyboard for **39.6-cm** (15.6-in) computers for use in Switzerland
605814-DD1	Keyboard for **39.6-cm** (15.6-in) computers for use in Iceland
605814-DJ1	Keyboard for **39.6-cm** (15.6-in) computers for use in Greece
605814-DW1	Keyboard for **39.6-cm** (15.6-in) computers for use in the French Arabic region
608137-001	250-GB, 7200-rpm hard drive for use in computers with **35.6-cm** (14-in) or **33.8-cm** (13.3-in) displays

Spare part number	Description
608138-001	320-GB, 7200-rpm hard drive for use in computers with **35.6-cm** (14-in) or **33.8-cm** (13.3-in) displays
608139-001	500-GB, 7200-rpm hard drive for use in computers with **35.6-cm** (14-in) or **33.8-cm** (13.3-in) displays
608140-001	DVD RW with LightScribe
608141-001	DVD-ROM
608931-001	Rubber Kit for **39.6-cm** (15.6-in) computers
611026-001	Webcam
611027-001	250-GB, 7200-rpm hard drive for use in computers with **39.6-cm** (15.6-in) displays
611028-001	320-GB, 7200-rpm hard drive for use in computers with **39.6-cm** (15.6-in) displays
611029-001	500-GB, 7200-rpm hard drive for use in computers with **39.6-cm** (15.6-in) displays
611802–001	System board with discrete graphics, AMD processor, RTC battery, with RS880M chipset
611803–001	System board with UMA graphics, AMD processor, RTC battery, with RS880M chipset
611804–001	Heat sink for use in computers with UMA graphics subsystem and AMD processor
611805–001	Heat sink for use in computers with discrete graphics subsystem and AMD processor
613152-001	65W AC adapter
613153-001	90W PFC AC adapter
613160-001	90W PFC AC adapter EM
613161–001	65W AC adapter EM
614522-001	160-GB, 7200-rpm hard drive for use in computers with **39.6-cm** (15.6-in) displays
614523-001	250-GB, 5400-rpm hard drive for use in computers with **39.6-cm** (15.6-in) displays
614955-001	320-GB, 5400-rpm hard drive for use in computers with **39.6-cm** (15.6-in) displays
614956–001	500-GB, 5400-rpm hard drive for use in computers with **39.6-cm** (15.6-in) displays
614957-001	320-GB, 5400-rpm hard drive for use in computers with **35.6-cm** (14-in) or **33.8-cm** (13.3-in) displays
614958-001	500-GB, 5400-rpm hard drive for use in computers with **35.6-cm** (14-in) or **33.8-cm** (13.3-in) displays
615040-001	160-GB, 5400-rpm hard drive for use in computers with **35.6-cm** (14-in) or **33.8-cm** (13.3-in) displays
615355-001	Heat sink for use in computers with discrete graphics subsystem and AMD processor
615844-001	160-GB, 5400-rpm hard drive for use in 39.6-cm (15.6-in) computer
616596-001	Compaq **33.8-cm** (13.3-in) display enclosure, red
616597-001	Display panel AntiGlare without webcam for use in **33.8-cm** (13.3-in) computer, red
616598-001	Display panel AntiGlare with webcam for use in **33.8-cm** (13.3-in) computer, red
616599-001	Display panel BrightView without webcam for use in **33.8-cm** (13.3-in) computer, red
616600-001	Display panel BrightView with webcam for use in **33.8-cm** (13.3-in) computer, red
616601-001	Top cover for Compaq **33.8-cm** (13.3-in) computers, red

Spare part number	Description
616602-01	Palm rest with TouchPad for Compaq **33.8-cm** (13.3-in) computers, red (includes TouchPad board and 2 cables)
620608-001	Audio board
620609-001	Base enclosure for **35.6-cm** (14.0-in) computers
622191-001	Base enclosure for **33.8-cm** (13.3-in) computers
622192-001	Base enclosure for **39.6-cm** (15.6-in) computers
622614-001	Audio board for use on system boards with UMA graphics subsystem
622615-001	USB board for use on system boards with UMA graphics subsystem

4 Removal and replacement procedures

Preliminary replacement requirements

Tools required

You will need the following tools to complete the removal and replacement procedures:

- Flat-bladed screwdriver
- Magnetic screwdriver
- Phillips P0 and P1 screwdrivers
- Torx T8 screwdriver

Service considerations

The following sections include some of the considerations that you must keep in mind during disassembly and assembly procedures.

NOTE: As you remove each subassembly from the computer, place the subassembly (and all accompanying screws) away from the work area to prevent damage.

Plastic parts

CAUTION: Using excessive force during disassembly and reassembly can damage plastic parts. Use care when handling the plastic parts. Apply pressure only at the points designated in the maintenance instructions.

Cables and connectors

△ **CAUTION:** When servicing the computer, be sure that cables are placed in their proper locations during the reassembly process. Improper cable placement can damage the computer.

Cables must be handled with extreme care to avoid damage. Apply only the tension required to unseat or seat the cables during removal and insertion. Handle cables by the connector whenever possible. In all cases, avoid bending, twisting, or tearing cables. Be sure that cables are routed in such a way that they cannot be caught or snagged by parts being removed or replaced. Handle flex cables with extreme care; these cables tear easily.

Drive handling

△ **CAUTION:** Drives are fragile components that must be handled with care. To prevent damage to the computer, damage to a drive, or loss of information, observe these precautions:

Before removing or inserting a hard drive, shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

Before handling a drive, be sure that you are discharged of static electricity. While handling a drive, avoid touching the connector.

Before removing a diskette drive or optical drive, be sure that a diskette or disc is not in the drive and be sure that the optical drive tray is closed.

Handle drives on surfaces covered with at least one inch of shock-proof foam.

Avoid dropping drives from any height onto any surface.

After removing a hard drive, an optical drive, or a diskette drive, place it in a static-proof bag.

Avoid exposing a hard drive to products that have magnetic fields, such as monitors or speakers.

Avoid exposing a drive to temperature extremes or liquids.

If a drive must be mailed, place the drive in a bubble pack mailer or other suitable form of protective packaging and label the package “FRAGILE.”

Grounding guidelines

Electrostatic discharge damage

Electronic components are sensitive to electrostatic discharge (ESD). Circuitry design and structure determine the degree of sensitivity. Networks built into many integrated circuits provide some protection, but in many cases, ESD contains enough power to alter device parameters or melt silicon junctions.

A discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Even if the spark is neither felt nor heard, damage may have occurred.

An electronic device exposed to ESD may not be affected at all and can work perfectly throughout a normal cycle. Or the device may function normally for a while, then degrade in the internal layers, reducing its life expectancy.

△ **CAUTION:** To prevent damage to the computer when you are removing or installing internal components, observe these precautions:

Keep components in their electrostatic-safe containers until you are ready to install them.

Use nonmagnetic tools.

Before touching an electronic component, discharge static electricity by using the guidelines described in this section.

Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.

If you remove a component, place it in an electrostatic-safe container.

The following table shows how humidity affects the electrostatic voltage levels generated by different activities.

△ **CAUTION:** A product can be degraded by as little as 700 V.

Typical electrostatic voltage levels

	Relative humidity		
Event	**10%**	**40%**	**55%**
Walking across carpet	35,000 V	15,000 V	7,500 V
Walking across vinyl floor	12,000 V	5,000 V	3,000 V
Motions of bench worker	6,000 V	800 V	400 V
Removing DIPS from plastic tube	2,000 V	700 V	400 V
Removing DIPS from vinyl tray	11,500 V	4,000 V	2,000 V
Removing DIPS from Styrofoam	14,500 V	5,000 V	3,500 V
Removing bubble pack from PCB	26,500 V	20,000 V	7,000 V
Packing PCBs in foam-lined box	21,000 V	11,000 V	5,000 V

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

- To avoid hand contact, transport products in static-safe tubes, bags, or boxes.
- Protect ESD-sensitive parts and assemblies with conductive or approved containers or packaging.
- Keep ESD-sensitive parts in their containers until the parts arrive at static-free workstations.
- Place items on a grounded surface before removing items from their containers.
- Always be properly grounded when touching a component or assembly.
- Store reusable ESD-sensitive parts from assemblies in protective packaging or nonconductive foam.
- Use transporters and conveyors made of antistatic belts and roller bushings. Be sure that mechanized equipment used for moving materials is wired to ground and that proper materials are selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

Workstation guidelines

Follow these grounding workstation guidelines:

- Cover the workstation with approved static-shielding material.
- Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.
- Use conductive field service tools, such as cutters, screwdrivers, and vacuums.
- When fixtures must directly contact dissipative surfaces, use fixtures made only of static-safe materials.
- Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and Styrofoam.
- Handle ESD-sensitive components, parts, and assemblies by the case or PCM laminate. Handle these items only at static-free workstations.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

Equipment guidelines

Grounding equipment must include either a wrist strap or a foot strap at a grounded workstation.

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm ±10% resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, use alligator clips to connect a wrist strap.
- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or boot straps) can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use foot straps on both feet with a minimum of one megohm resistance between the operator and ground. To be effective, the conductive strips must be worn in contact with the skin.

The following grounding equipment is recommended to prevent electrostatic damage:

- Antistatic tape
- Antistatic smocks, aprons, and sleeve protectors
- Conductive bins and other assembly or soldering aids
- Nonconductive foam
- Conductive tabletop workstations with ground cords of one megohm resistance
- Static-dissipative tables or floor mats with hard ties to the ground
- Field service kits
- Static awareness labels
- Material-handling packages
- Nonconductive plastic bags, tubes, or boxes
- Metal tote boxes
- Electrostatic voltage levels and protective materials

The following table lists the shielding protection provided by antistatic bags and floor mats.

Material	Use	Voltage protection level
Antistatic plastic	Bags	1,500 V
Carbon-loaded plastic	Floor mats	7,500 V
Metallized laminate	Floor mats	5,000 V

Component replacement procedures

This section provides removal and replacement procedures.

There are many screws, in many different sizes, that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Service tag

When ordering parts or requesting information, provide the computer serial number and model description provided on the service tag:

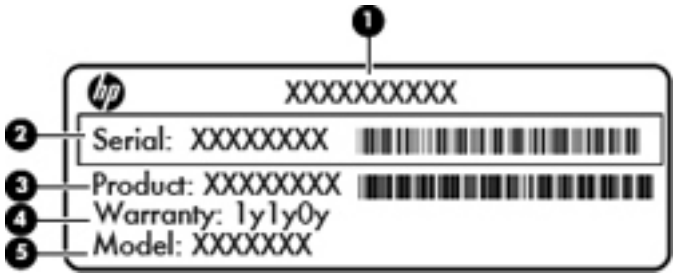
(1) Product name: This is the product name affixed to the front of the computer.

(2) Serial number (s/n): This is an alphanumeric identifier that is unique to each product.

(3) Product number (p/n): This number provides specific information about the hardware components. The product number helps a service technician to determine what components and parts are needed.

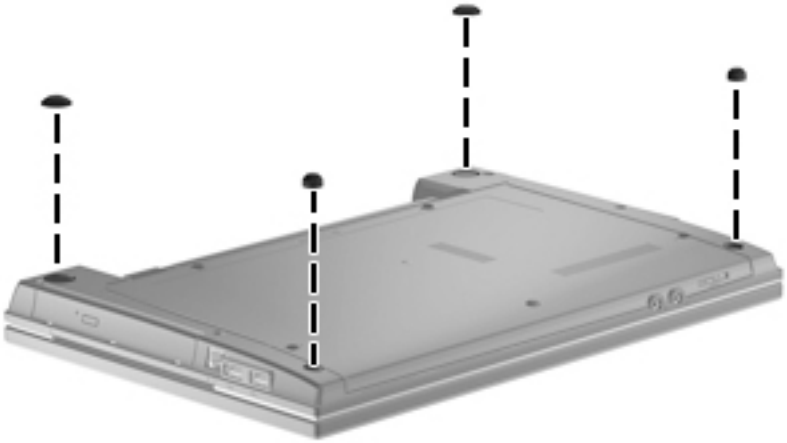
(4) Warranty period: This number describes the duration (in years) of the warranty period for this computer.

(5) Model description: This is an alphanumeric identifier used to locate documents, drivers, and support for the computer.



Computer feet

The computer feet are adhesive-backed rubber pads. The feet are included in the Rubber Kit, spare part number 605789-001 for **33.8-cm** (13.3-in) and **35.6-cm** (14.0-in) computers and in Rubber Kit 608931-001 for **39.6-cm** (15.6-in) computers. There are 4 rubber feet that attach to the base enclosure in the locations illustrated below.



Battery

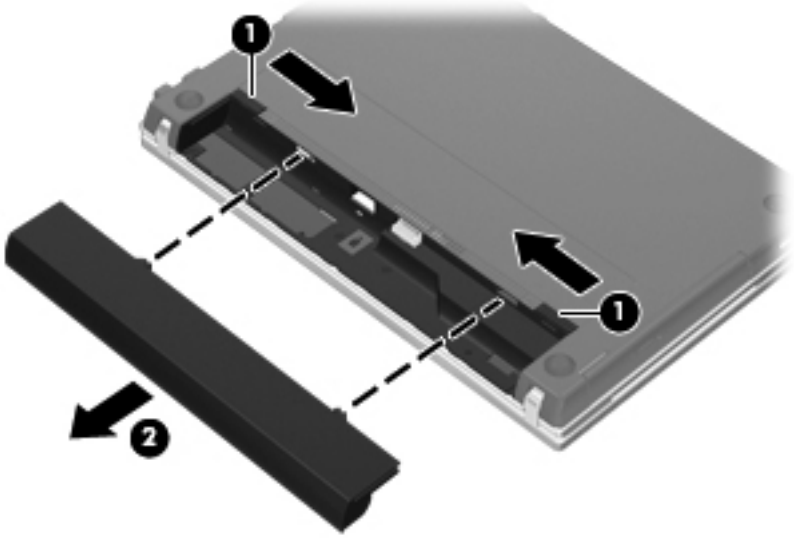
Description	Spare part number
9-cell, 93-Wh, 2.8-Ah Li-on battery	593573-001
6-cell, 47-Wh, 2.2-Ah Li-on battery	593572-001

Before disassembling the computer, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

Remove the battery:

1. Turn the computer upside down on a flat surface with the battery bay toward you.
2. Slide the battery release latches **(1)** to release the battery.
3. Remove the battery **(2)** from the computer.



Install the battery by inserting it into the battery bay until you hear a click.

Service door

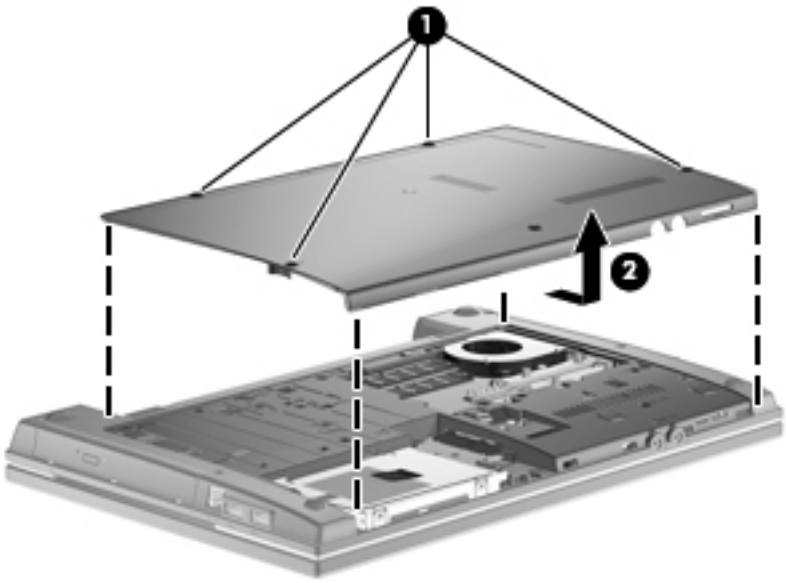
Description	Spare part number
For use in computers with **39.6-cm** (15.6-in) displays	605785-001
For use in computers with **35.6-cm** (14-in) and **33.8-cm** (13.3-in) displays	605784-001

Before removing the service door follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).

Remove the service door on a **39.6-cm** (15.6-in) computer:

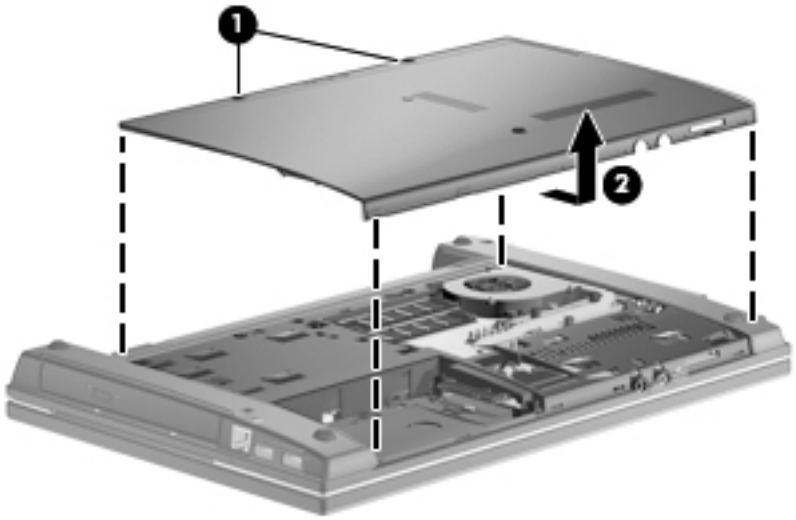
1. Loosen the four Phillips PM2.0×3.0 captive screws **(1)** that secure the service door to the computer.
2. Slide the service door **(2)** away from the computer.



Remove the service door on a **35.6-cm** (14-in) or **33.8-cm** (13.3-in) computer:

1. Loosen the two Phillips PM2.0×3.0 captive screws **(1)** that secure the service door to the computer.

2. Slide the service door **(2)** away from the computer.



Reverse this procedure to install the service door.

Hard drive

NOTE: The hard drive spare part kit includes a hard drive bracket.

Description	Spare part number
500-GB, 7200-rpm hard drive for use in computers with **39.6-cm** (15.6-in) displays	611029-001
500-GB, 5400-rpm hard drive for use in computers with **39.6-cm** (15.6-in) displays	614956-001
320-GB, 7200-rpm hard drive for use in computers with **39.6-cm** (15.6-in) displays	611028-001
320-GB, 5400-rpm hard drive for use in computers with **39.6-cm** (15.6-in) displays	614955-001
250-GB, 7200-rpm hard drive for use in computers with **39.6-cm** (15.6-in) displays	611027-001
250-GB, 5400-rpm hard drive for use in computers with **39.6-cm** (15.6-in) displays	614523-001
160-GB, 7200-rpm hard drive for use in computers with **39.6-cm** (15.6-in) displays	614522-001
160-GB, 5400-rpm hard drive for use in computers with **39.6-cm** (15.6-in) displays	615844-001
500-GB, 7200-rpm hard drive	608139-001
500-GB, 5400-rpm hard drive	614958-001
320-GB, 7200-rpm hard drive	608138-001
320-GB, 5400-rpm hard drive	614957-001
250-GB, 7200-rpm hard drive	608137-001
250-GB, 5400-rpm hard drive	493994-001
160-GB, 7200-rpm hard drive	455954-001
160-GB, 5400-rpm hard drive	615040-001

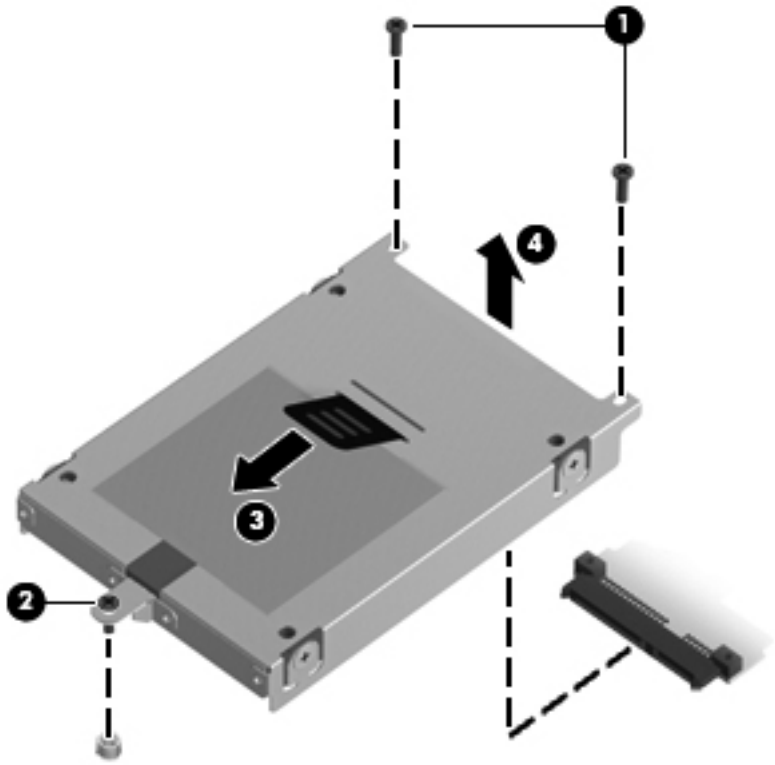
Before removing the hard drive, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).

Remove the hard drive from a **39.6-cm** (15.6-in) computer:

1. Position the computer right-side up with the front toward you.
2. Remove the two Phillips PM2.5×6.0 screws **(1)** and loosen the Phillips PM2.5×11.0 captive screw **(2)** that secure the hard drive to the computer.

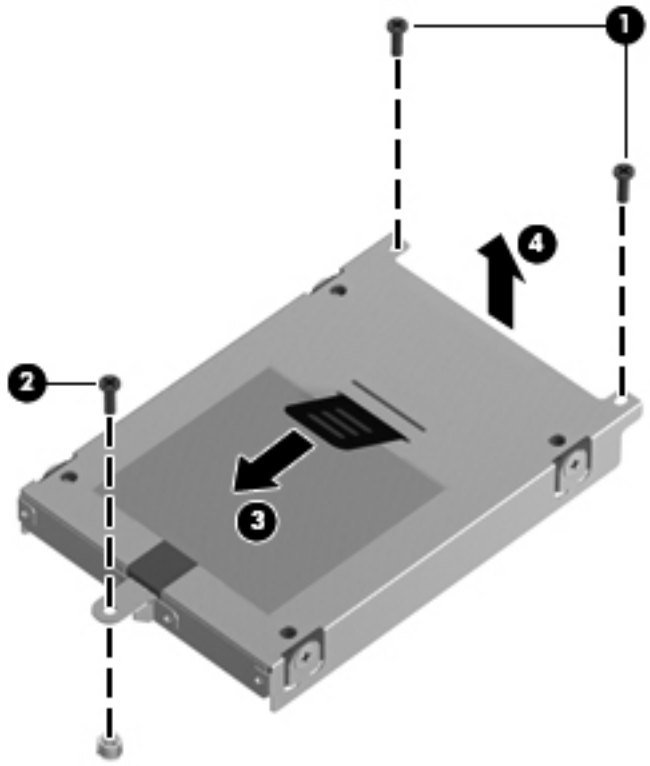
3. Grasp the mylar tab on the hard drive and slide the hard drive **(3)** to the left to disconnect it from the system board.
4. Remove the hard drive **(4)** from the hard drive bay.



Remove the hard drive from a **35.6-cm** (14-in) or **33.8-cm** (13.3-in) computer:

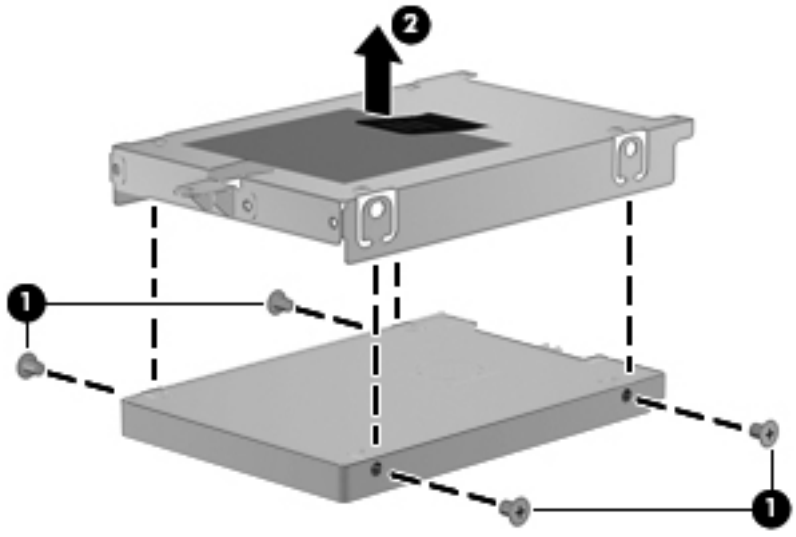
1. Position the computer right-side up with the front toward you.
2. Remove the two Phillips PM2.5×6.0 screws **(1)** and loosen the Phillips PM2.5×4.0 captive screw **(2)** that secure the hard drive to the computer.
3. Grasp the mylar tab on the hard drive and slide the hard drive **(3)** to the left to disconnect it from the system board.

4. Remove the hard drive **(4)** from the hard drive bay.



To remove the hard drive bracket, follow these steps:

1. If it is necessary to replace the hard drive bracket, remove the two Phillips PM3.0×4.0 hard drive bracket screws **(1)** from each side of the hard drive.
2. Lift the bracket **(2)** straight up to remove it from the hard drive.



Reverse this procedure to reassemble and install the hard drive.

Memory module

NOTE: When adding a second memory module, be sure it is the same type and speed as the installed memory module.

Description	Spare part number
2-GB (PC3-10600, 1333-MHz, DDR3)	598856-001
1-GB (PC3-10600, 1333-MHz, DDR3)	598859-001

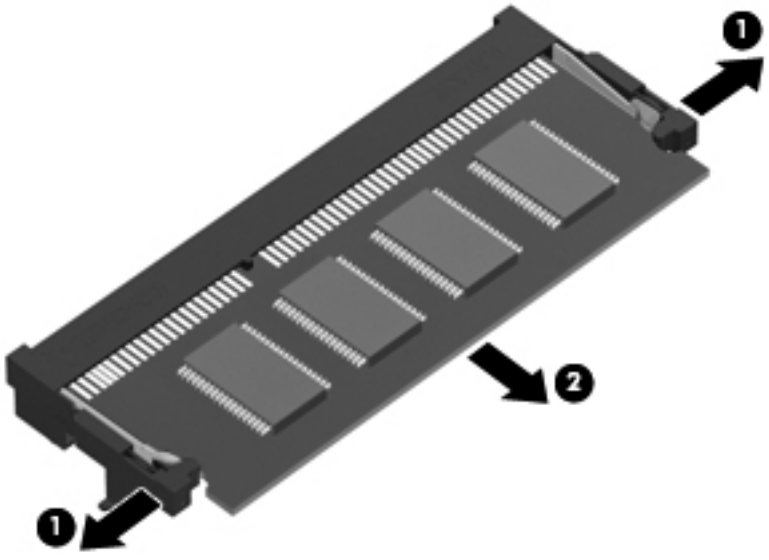
Before removing the memory module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).

Remove the memory module:

1. Position the computer right-side up with the front toward you.
2. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The edge of the module opposite the slot rises away from the computer.)
3. Remove the memory module **(2)** by pulling the module away from the slot at an angle.

NOTE: Memory modules are designed with a notch to prevent incorrect insertion into the memory module slot.



Reverse this procedure to install a memory module.

WLAN module

Description	Spare part number
Broadcom 4312 802.11b/g WLAN modules	
• For use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	504593-003
• For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	504593-004
Broadcom 4313AGN 802.11a/b/g/draft-n WiFi Adapter	593836-001
Atheros 9285G 802.11 b/g/n WiFi Adapter for use in all countries and regions	605560-005
Realtek RTL8191SE802.11 b/g/n WiFi Adapter for use in all countries and regions	593533-001

△ **CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact technical support through Help and Support.

Before removing the WLAN module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.

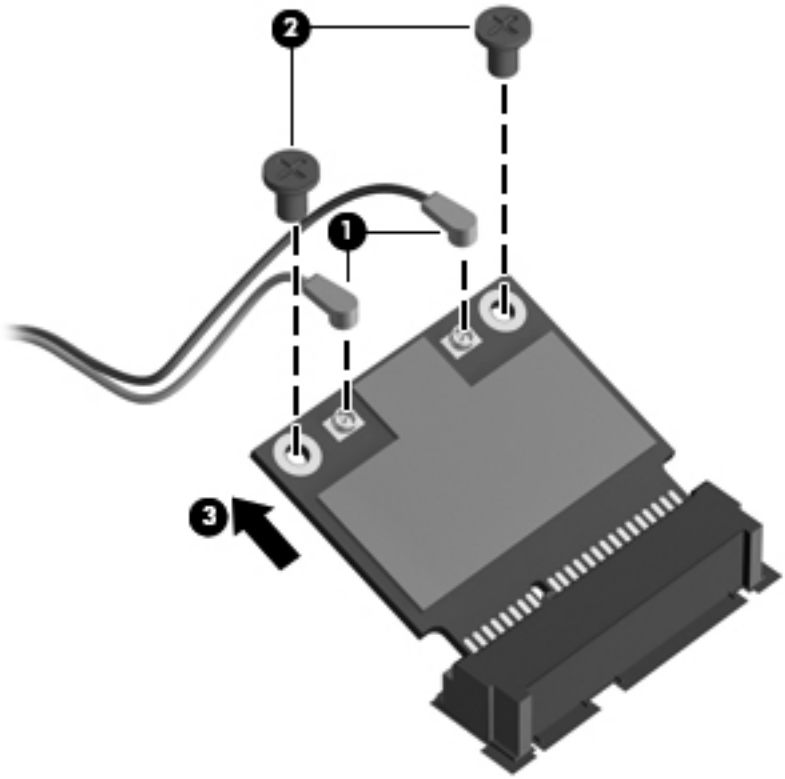
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).

Remove the WLAN module:

1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.

NOTE: The black WLAN antenna cable is connected to the WLAN module "Main" terminal. The white WLAN antenna cable is connected to the WLAN module "Aux" terminal.

2. Remove the two Phillips PM2.0×2.5 screws **(2)** that secure the WLAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)
3. Remove the WLAN module **(3)** by pulling the module away from the slot at an angle.



Reverse this procedure to install the WLAN module.

Optical drive

NOTE: All optical drive spare part kits include an optical drive bezel.

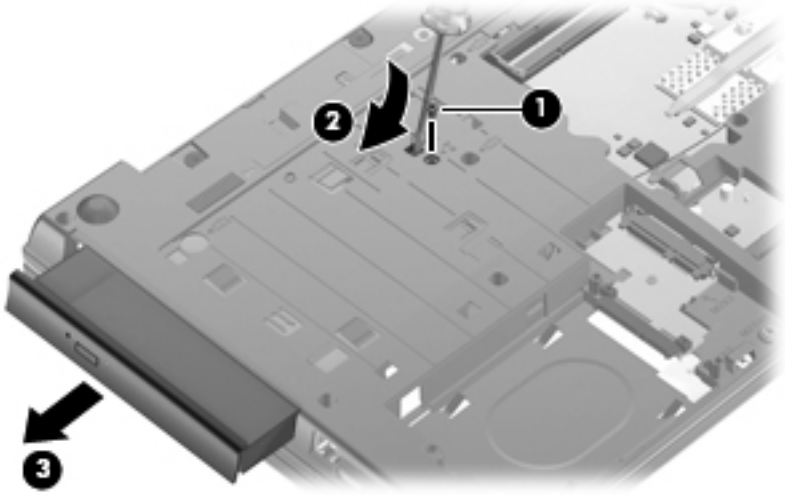
Description	Spare part number
DVD±RW Double-Layer Drive with LightScribe (includes bezel)	608140-001
DVD-ROM Drive (includes bezel)	608141-001

Before removing the optical drive, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).

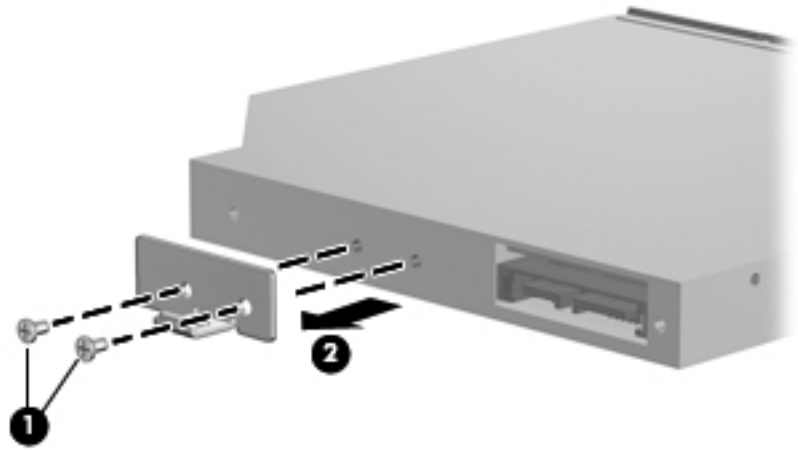
Remove the optical drive:

1. Position the computer with the right side toward you.
2. Remove the Torx M2.5×6.0 screw **(1)** that secures the optical drive to the computer.
3. Insert a flat-bladed screwdriver or similar tool into the optical drive tab access **(2)** and press the tab to the right to release the optical drive from the computer.
4. Remove the optical drive **(3)** from the computer.



5. If it is necessary to replace the optical drive bracket, position the optical drive with the rear toward you.

6. Remove the two Phillips PM2.0×2.0 screws **(1)** that secure the optical drive bracket to the optical drive.
7. Remove the optical drive bracket **(2)**.



Reverse this procedure to reassemble and install an optical drive.

Fan

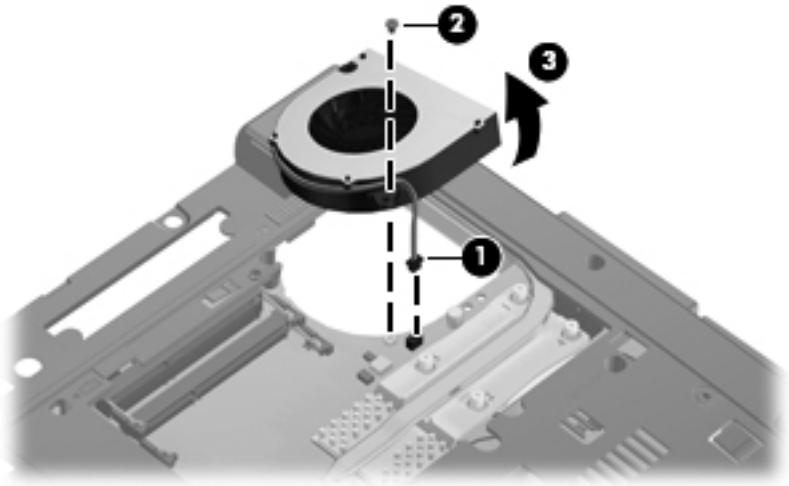
Description	Spare part number
Fan for use in **39.6-cm** (15.6-in) computer models	605791-001
Fan for use in **33.8-cm** (13.3-in) and 35.6-cm (14.5-in) computer models	605787-001

Before removing the fan, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).

Remove the fan:

1. Position the computer upside down with the front toward you.
2. Disconnect the fan cable **(1)** from the system board .
3. Remove the Phillips PM2.0×3.0 screw **(2)** that secures the fan, and then remove the fan **(3)**.



Reverse this procedure to install the fan.

Heat sink

NOTE: The heat sink spare part kit includes replacement thermal material.

Description	Spare part number
Heat sink for use in computers with UMA graphics subsystems	611804-001
Heat sink for use in computers with discrete graphics subsystems NB	611805-001
Heat sink for use in computers with discrete graphics subsystems CPU	615355-001

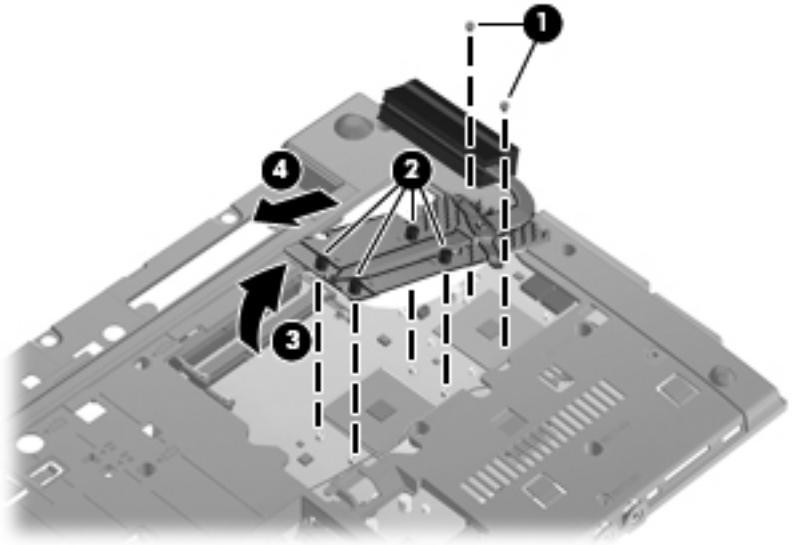
Before removing the heat sink, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).
6. Remove the fan (see Fan on page 63).

Remove the heat sink on computers with UMA graphics subsystems:

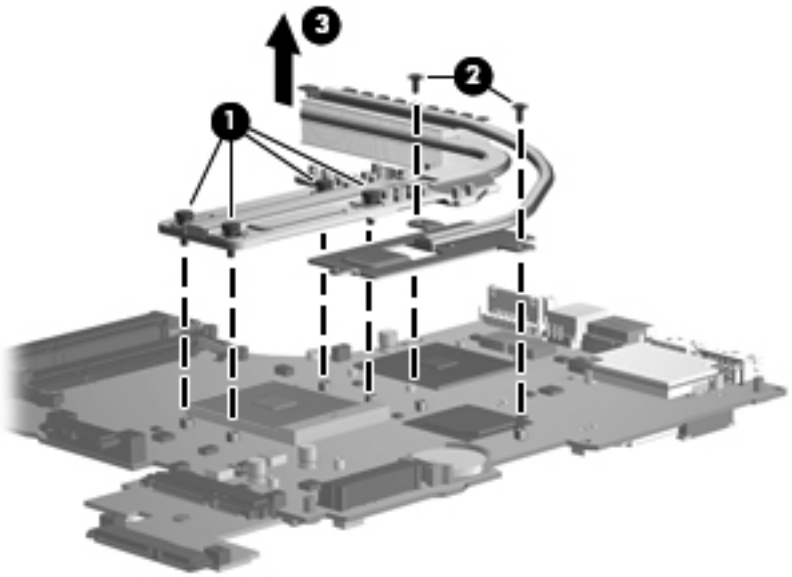
1. Position the computer right-side up with the front facing you.
2. Following the numbered sequence stamped into the heat sink, loosen the captive screws **(1)** and **(2)** around the processor.

3. Raise the end of the heat sink **(3)** to free it from the system board components and then remove the heat sink **(4)** from the system board.



Remove the heat sink on computers with discrete graphics subsystems:

1. Position the computer right-side up with the front facing you.
2. Following the numbered sequence stamped into the heat sink, loosen the captive screws **(1)** and **(2)** around the processor.
3. Lift the heat sink **(3)** from the system board.



Following the numbered sequence stamped into the heat sink, reverse the above procedure to install the heat sink.

Processor

NOTE: The processor spare part kit includes replacement thermal material.

Description	Spare part number
AMD Athlon™ II Dual-Core P320 2.1-GHz, 2MB L2	594165–001
AMD Sempron™ Single-Core V120 2-GHz, 2MB L2	594171–001
AMD Turion™ II Dual-Core, P520 2.3-GHz, 2MB L2	594173–001
AMD Phenom II Champlain P820 25W	594167-001

Before removing the processor, follow these steps:

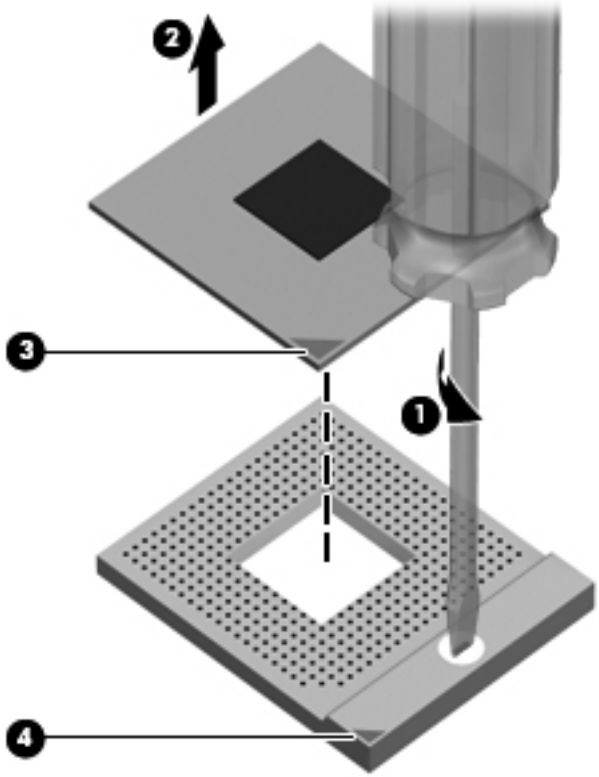
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).
6. Remove the fan (see Fan on page 63).
7. Remove the heat sink (see Heat sink on page 64).

Remove the processor:

1. Position the computer right-side up with the front toward you.
2. Use a flat-bladed screwdriver to turn the processor locking screw **(1)** one-half turn counterclockwise until you hear a click.

3. Lift the processor **(2)** straight up and remove it.

NOTE: When you install the processor, the gold triangle **(3)** on the processor must be aligned with the triangle **(4)** embossed on the processor socket.



Reverse this procedure to install the processor.

Palm rest

Description	Spare part number
Palm rest for Compaq brand units with **33.8-cm** (13.3-in) displays (includes TouchPad, TouckPad board, and 2 cables)	605779-001
Palm rest for Compaq brand units with **33.8-cm** (13.3-in) displays (includes TouchPad, TouchPad board, and 2 cables), Red	616602-001
Palm rest for HP brand units with **39.6-cm** (15.6-in) displays (includes TouchPad, TouchPad board, and 2 cables)	605782-001
Palm rest for HP brand units with **35.6-cm** (14-in) displays (includes TouchPad, TouchPad board, and 2 cables)	605780-001

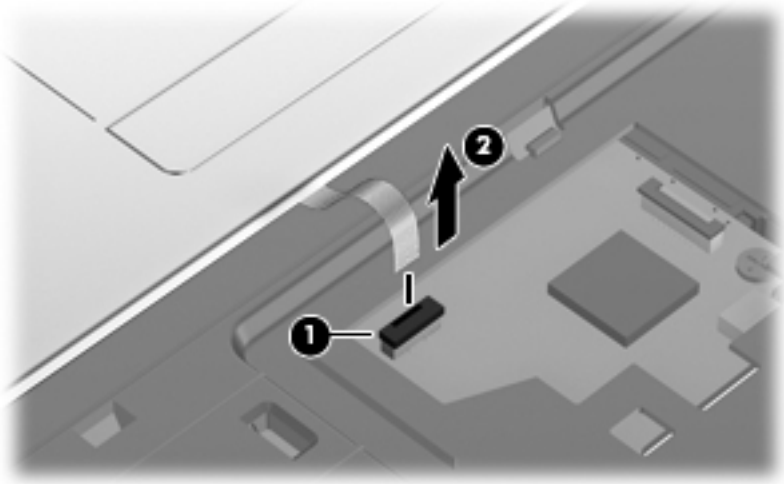
Before removing the palm rest, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).

Remove the palm rest on **39.6-cm** (15.6-in) computers:

1. Position the computer right side up with the display open.
2. Pull up **(1)** on the top edge of the palm rest nearest the keyboard. With the palm rest at an angle, slide the unit **(2)** to release the latches at its base.

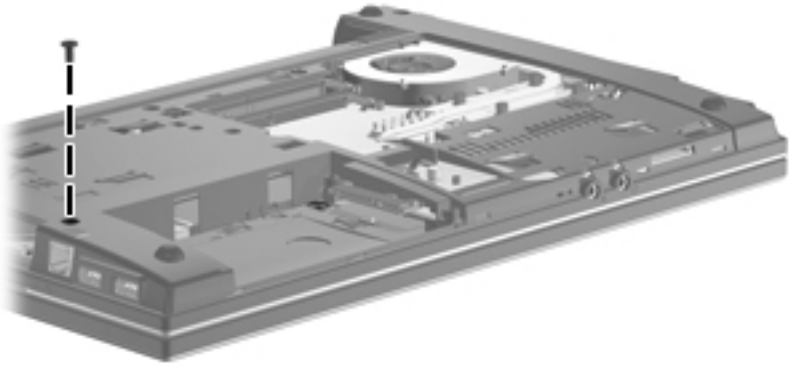
3. Release the ZIF connector **(1)** to which the TouchPad cable is connected, and then disconnect the cable **(2)** from the system board.



4. Remove the palm rest.

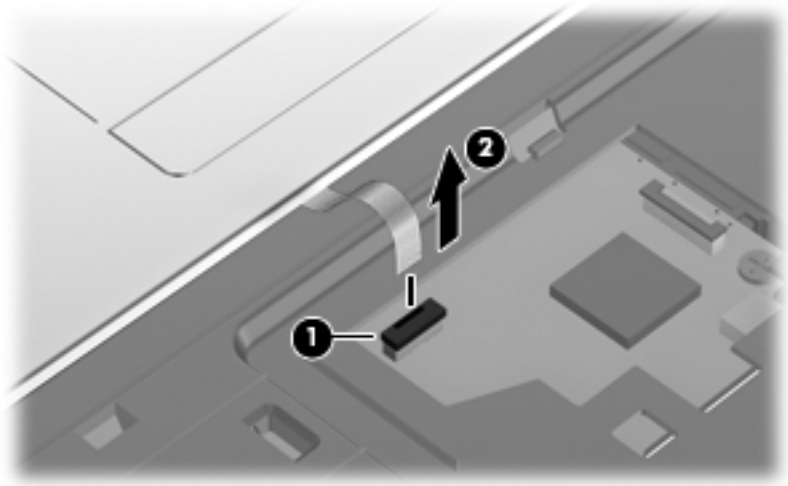
Remove the palm rest on **35.6-cm** (14-in) or **33.8-cm** (13.3-in) computers:

1. Position the computer upside down with the front toward you.
2. Remove the Torx M2.5×6.0 screw that secures the palm rest to the computer.



3. Turn the computer over, rotate the palm rest up **(1)** and slide the palm rest to the right **(2)** to release it from the computer.

4. Release the ZIF connector **(1)** to which the TouchPad cable is connected, and then disconnect the cable **(2)** from the system board.



5. Remove the palm rest.

Reverse this procedure to install the palm rest.

Keyboard

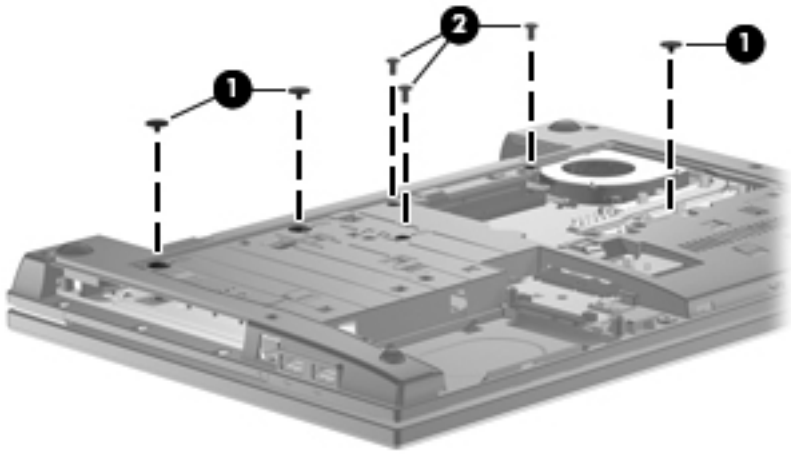
Description	Spare part number
Keyboards for use in computers with 39.6-cm (15.6-in) displays	605814-xx1
Keyboards for use in computers with 35.6-cm (14.3-in) and 33.8-cm (13.3-in) displays	605813-xx1
NOTE: For a detailed list of available keyboards, see Sequential part number listing on page 37.	

Before removing the keyboard, follow these steps:

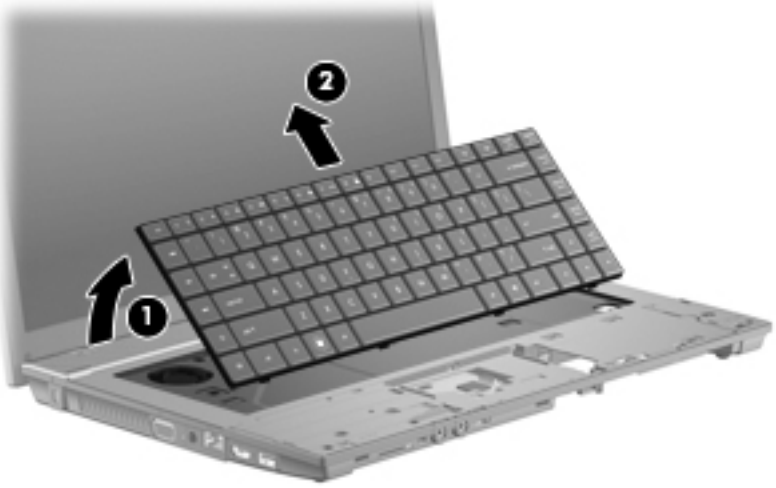
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).
6. Remove the palm rest (see Palm rest on page 68).

Remove the keyboard on **39.6-cm** (15.6-in) computers:

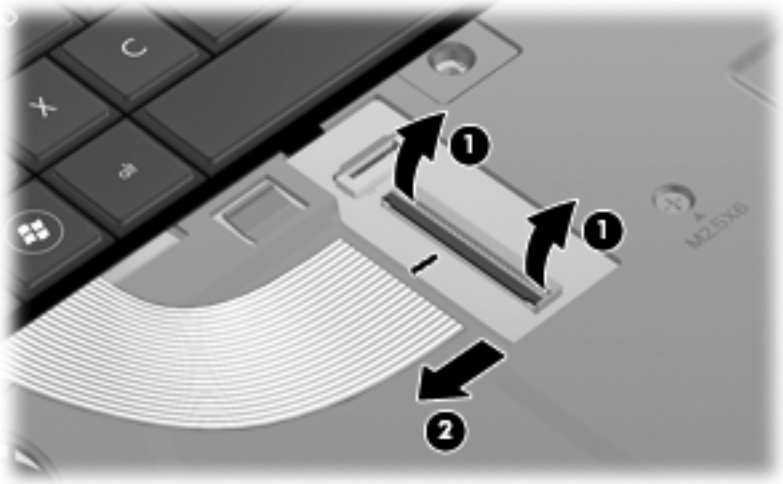
1. Position the computer upside down with the rear toward you.
2. Remove the three Phillips PM2.5×3.0 broadhead black screws **(1)** and three Torx M2.5×6.0 screws **(2)** that secure the keyboard.



3. Turn the unit over, lift the top edge of the keyboard **(1)** and slide it **(2)** towards the display.



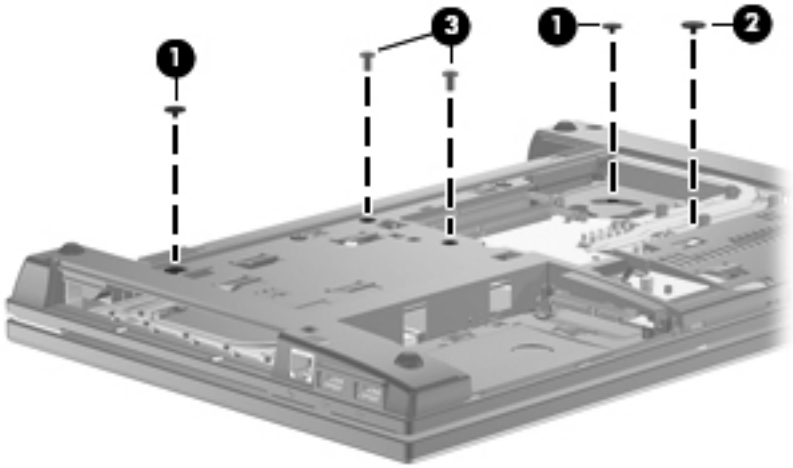
4. Rest the keyboard on its edge and slide the keyboard back toward the display then, release the ZIF connector **(1)** to which the keyboard cable is attached, and disconnect the keyboard cable **(2)** from the system board.



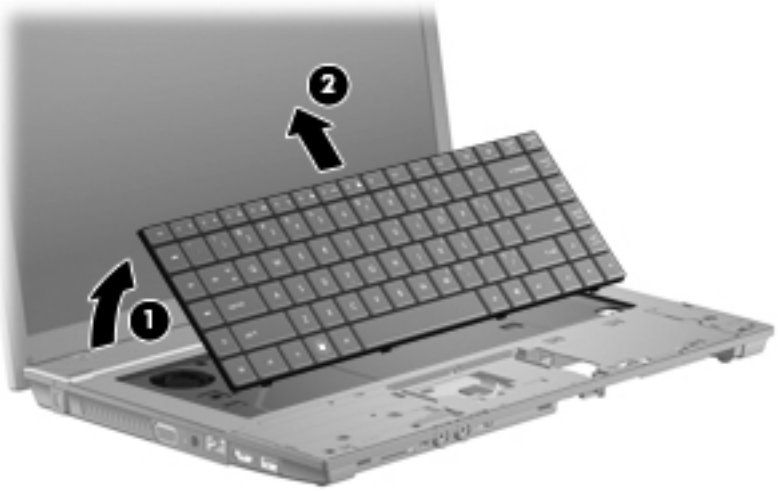
Remove the keyboard on **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers:

1. Position the computer upside down with the rear toward you.

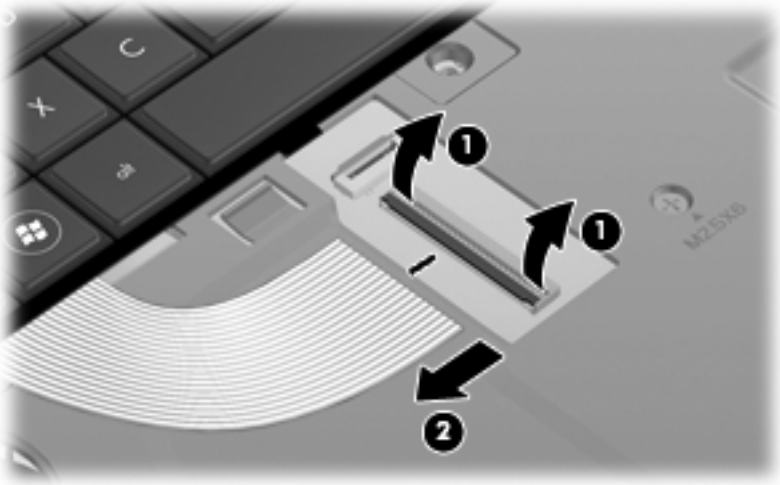
2. Remove two Phillips PM2.5×3.0 broadhead black screws **(1)**, one Phillips PM2.5×3.0 broadhead silver screw **(2)**, and two Torx M2.5×6.0 screws **(3)** that secure the keyboard.



3. Turn the unit over, lift the top edge of the keyboard **(1)** and slide it **(2)** towards the display.



4. Rest the keyboard on its edge and slide the keyboard back toward the display then, release the ZIF connector **(1)** to which the keyboard cable is attached, and disconnect the keyboard cable **(2)** from the system board.



Reverse this procedure to install the keyboard.

Top cover

Description	Spare part number
Top cover for use in Compaq brand computers with **33.8-cm** (13.3-in) displays	605774-001
Top cover for use in Compaq brand computers with **33.8-cm** (13.3-in) displays, red	616601-001
Top cover for use in HP brand computers with **39.6-cm** (15.6-in) displays	605777-001
Top cover for use in HP brand computers with **35.6-cm** (14.0-in) displays	605775-001

Before removing the top cover, follow these steps:

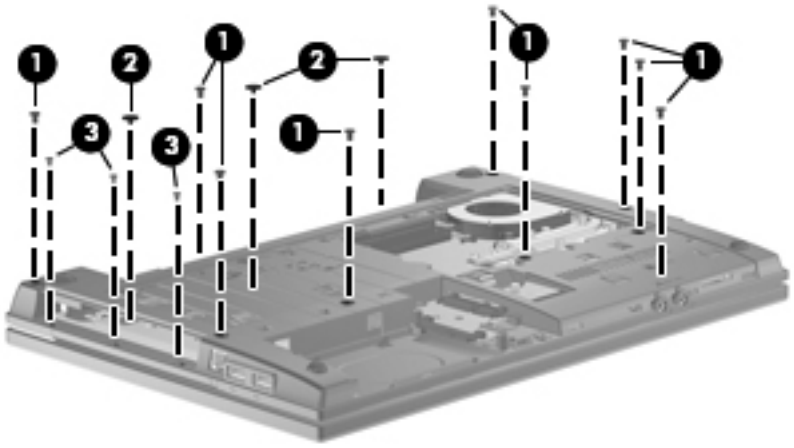
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).
6. Remove the palm rest (see Palm rest on page 68).
7. Remove the keyboard (see Keyboard on page 71).

Remove the top cover on a **39.6-cm** (15.6-in) computer:

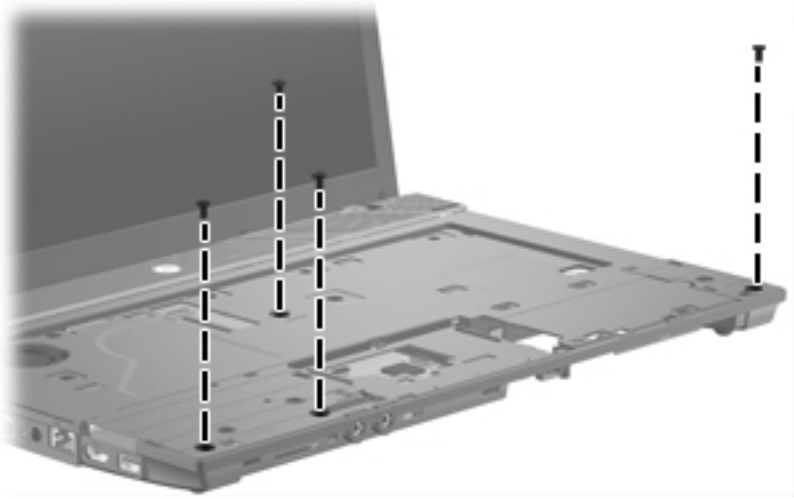
1. With the display panel in the open position, press in **(1)** of the ExpressCard to release it and then pull the card **(2)** from the computer.

2. Position the computer upside down with the front toward you.

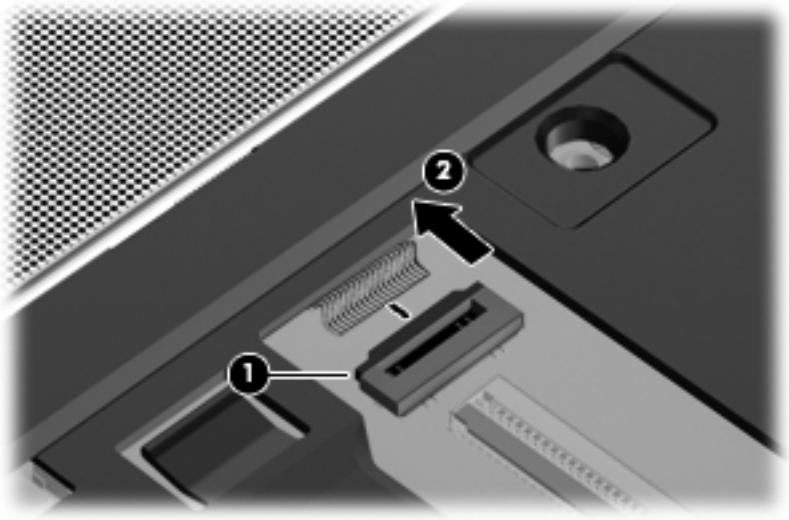
3. Remove the nine Torx M2.5×6.0 screws **(1)**, three Phillips PM2.5×3.0 black broadhead screws **(2)**, and three Phillips PM2.0×3.0 screws **(3)**.



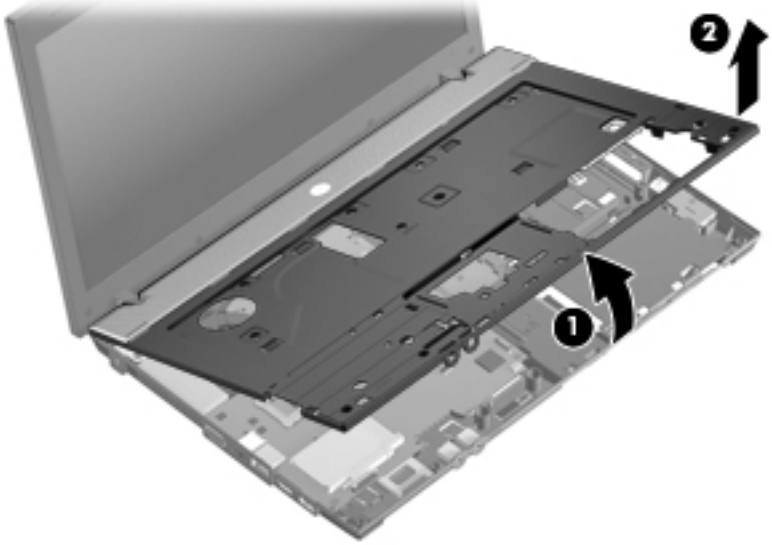
4. Turn the computer over so it is right-side up and remove four Torx M2.5×6.0 screws.



5. Release the ZIF connector **(1)** and remove the power switch cable **(2)**.



6. Rotate the top cover up **(1)** and remove it from the base enclosure **(2)**.

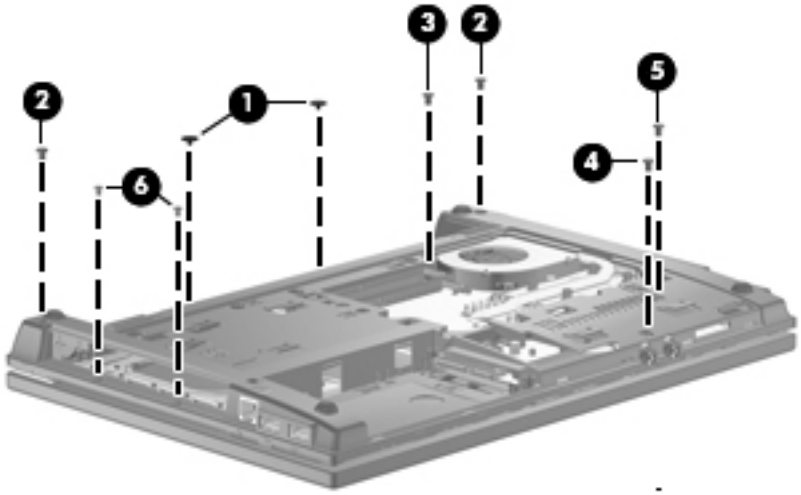


Remove the top cover on a **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computer:

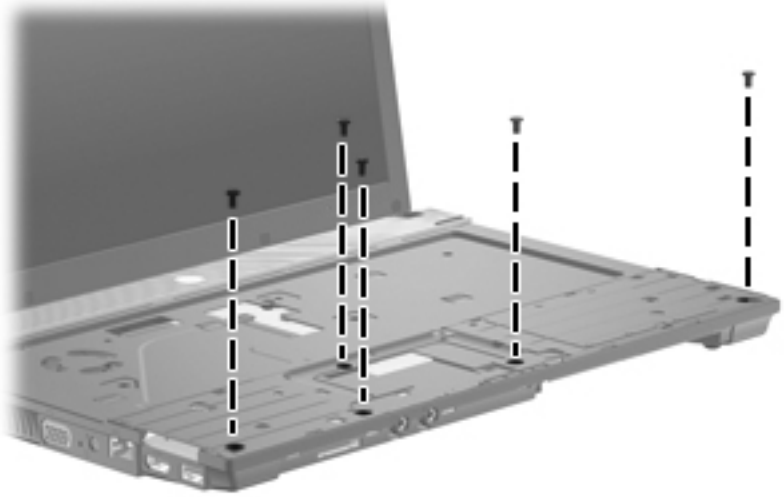
1. With the display panel in the open position, press in **(1)** of the ExpressCard to release it and then pull the card **(2)** from the computer.

2. Position the computer upside down with the front toward you.

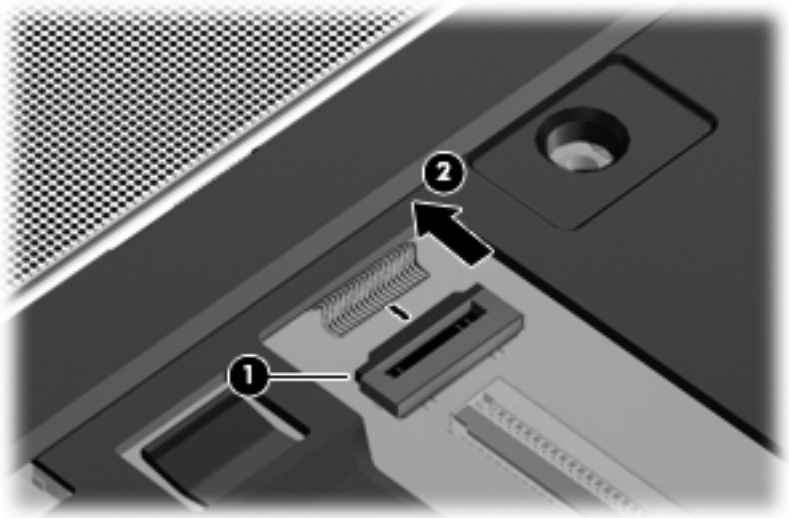
3. Remove the two Phillips PM2.0×2.0 screws **(1)** located in the battery bay, the five Torx M2.5×6.0 screws **(2), (3), (4)**, and **(5)**, and the two Phillips PM2.0×3.0 screws **(6)** located in the recess near the optical drive.



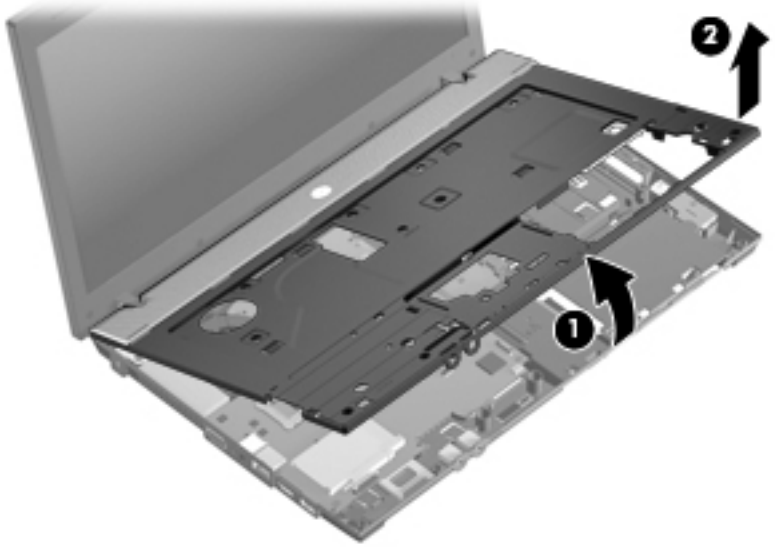
4. Turn the computer over so it is right-side up and remove five Torx M2.5×6.0 screws.



5. Release the ZIF connector **(1)** and disconnect the power switch cable **(2)**.



6. Rotate the top cover up **(1)** and off the base enclosure **(2)**.



Reverse this procedure to install the top cover.

Power switch board

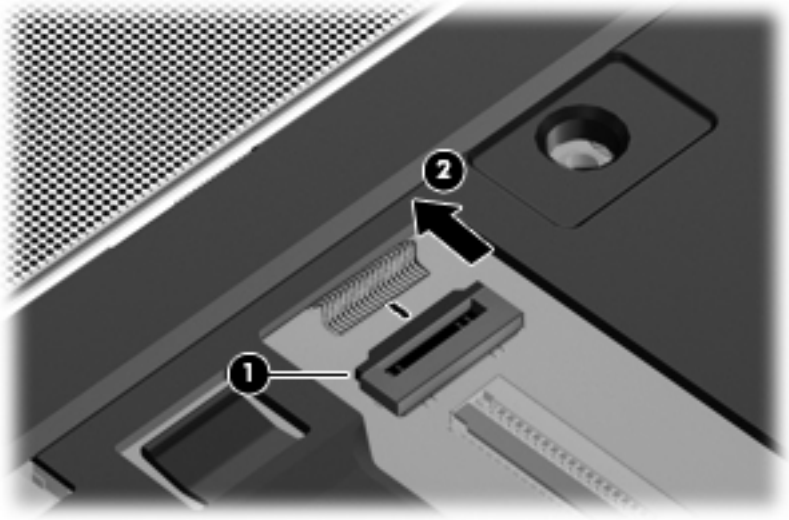
The spare part number for the power switch board used in all models is 605794-001.

Before removing the power switch board, follow these steps:

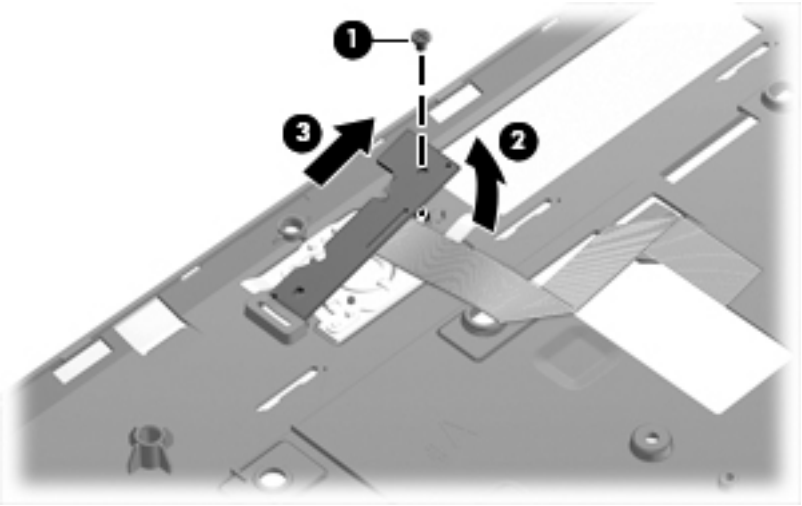
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).
6. Remove the keyboard (see Keyboard on page 71).

Remove the power switch board:

1. Release the ZIF connector **(1)** and disconnect the ribbon cable **(2)** from the system board.



2. Remove the Phillips M2.5×3.0 broadhead screw **(1)** that secures the board to the base pan, raise the end of the board **(2)**, and then slide the board out of the retainer **(3)**.



Reverse this procedure to install the power switch board.

Bluetooth module

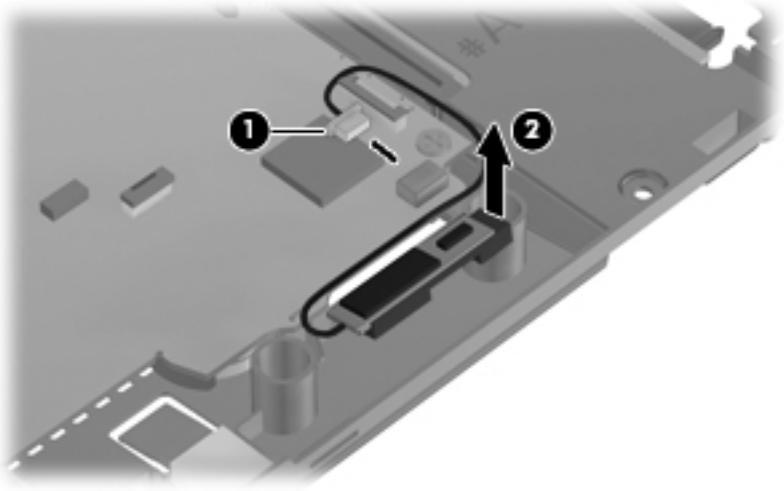
NOTE: The Bluetooth module spare part number is 537921-001 and is used in all countries and regions except Japan and Asia Pacific countries and regions. The Bluetooth module cable is included in the Cable Kit, spare part number 605793-001. See Cables on page 32 for more Cable Kit spare part number information.

Before removing the Bluetooth module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the palm rest (see Palm rest on page 68).
6. Remove the keyboard (see Keyboard on page 71).
7. Remove the top cover (see Top cover on page 75).

Remove the Bluetooth module on **39.6-cm** (15.6-in) computers:

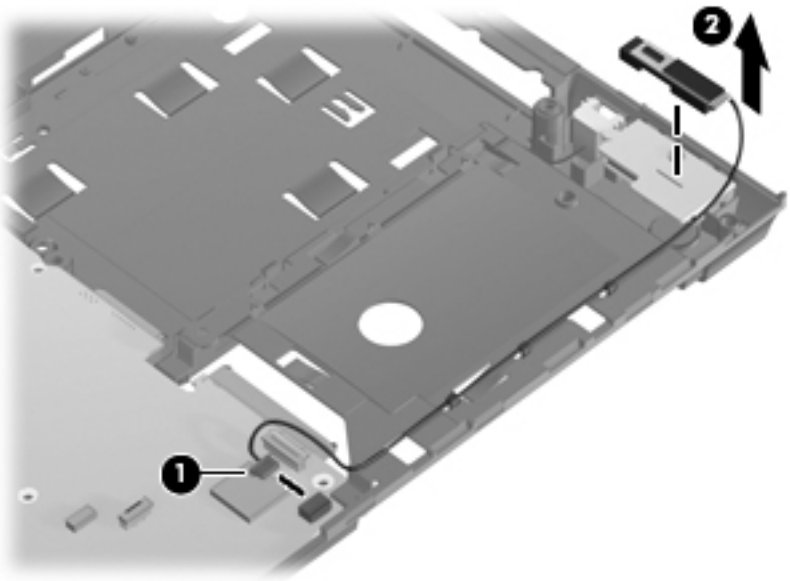
1. Position the computer right-side up with the front toward you.
2. Disconnect the Bluetooth cable **(1)** from the system board and remove the antenna **(2)** from the base enclosure. The antenna is held to the base enclosure with adhesive.



Remove the Bluetooth module on **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers:

1. Position the computer right-side up with the front toward you.

2. Disconnect the Bluetooth cable **(1)** from the system board and remove the antenna **(2)** from the base enclosure. The antenna is held to the base enclosure with adhesive.



Reverse this procedure to install the Bluetooth module.

USB connector assembly

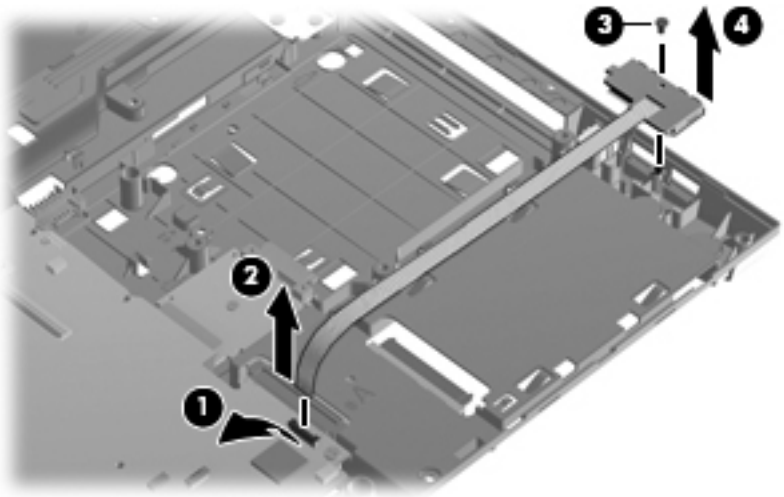
Description	Spare Part Number
USB board with cable	605796-001
USB board for use on system boards with UMA graphics subsystem	622615-001

Before removing the USB connector assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the palm rest (see Palm rest on page 68).
6. Remove the keyboard (see Keyboard on page 71).
7. Remove the top cover (see Top cover on page 75).

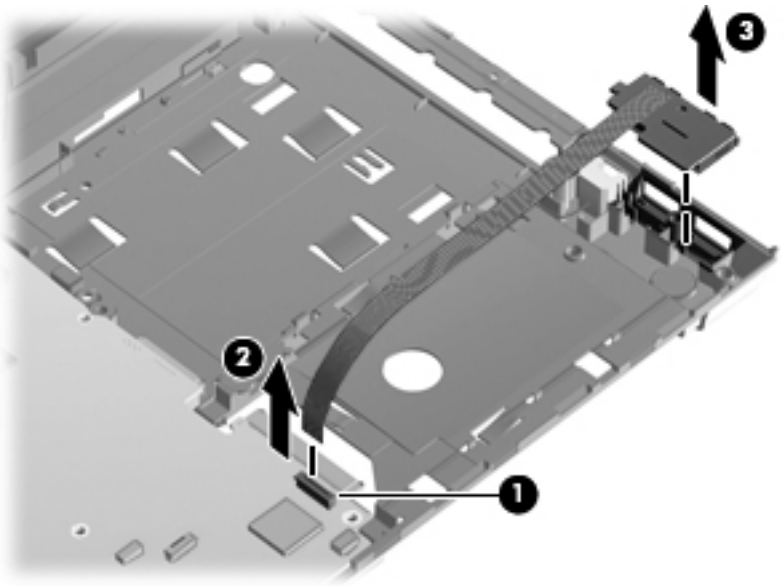
Remove the USB connector assembly on **39.6-cm** (15.6-in) computers:

1. Position the computer right-side up with the right side toward you.
2. Release the ZIF connector **(1)** and remove the cable **(2)** from the system board.
3. Remove the Torx M2.5×6.0 screw **(3)** then, lift the USB connector assembly **(4)** from the base enclosure.



Remove the USB connector assembly on **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers:

1. Position the computer right-side up with the right side toward you.
2. Release the ZIF connector **(1)** and remove the cable **(2)** from the system board.
3. Lift the USB connector assembly **(3)** that is held on the base enclosure with adhesive.



Reverse this procedure to install the USB connector assembly.

Speaker

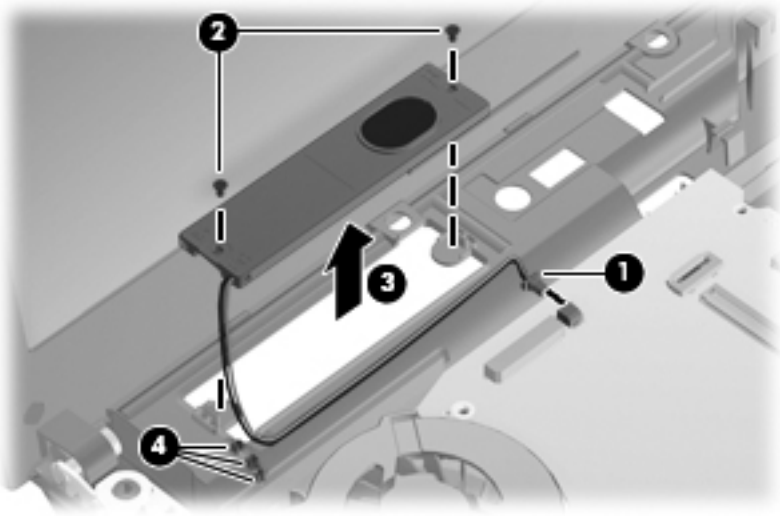
The spare part number for the speaker used in all models is 605792-001.

Before removing the speaker, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).
6. Remove the palm rest (see Palm rest on page 68).
7. Remove the keyboard (see Keyboard on page 71).
8. Remove the top cover (see Top cover on page 75).

Remove the speaker:

1. Disconnect the speaker cable from the connector **(1)** on the system board.
2. Remove the two screws from the speaker **(2)**.
3. Lift the speaker up **(3)**, and then release the cable from the cable retainers **(4)**.
4. Remove the speaker and cable from the base enclosure.



Reverse this procedure to install the speaker.

Display assembly

Description	Spare part number
• **39.6-cm** (15.6-in) HD BrightView display assembly for use in computers equipped with webcam (1366×768 resolution)	605804-001
• **39.6-cm** (15.6-in) HD BrightView display assembly for use in computers without webcam (1366×768 resolution)	605803-001
• **39.6-cm** (15.6-in) HD AntiGlare display assembly for use in computers equipped with webcam (1366×768 resolution)	605802-001
• **39.6-cm** (15.6-in HD AntiGlare display assembly for use in computers equipped without webcam (1366×768 resolution)	605801-001
• **35.6-cm** (14.0-in) HD BrightView display assembly for use in computers equipped with webcam (1366×768 resolution)	605808-001
• **35.6-cm** (14.0-in) HD BrightView display assembly for use in computers without webcam (1366×768 resolution)	605807-001
• **35.6-cm** (14.0-in) HD AntiGlare display assembly for use in computers equipped with webcam (1366×768 resolution)	605806-001
• **35.6-cm** (14.0-in) HD AntiGlare display assembly for use in computers without webcam (1366×768 resolution)	605805-001
• **33.8-cm** (13.3-in) HD BrightView display assembly for use in computers equipped with webcam and WLAN (1366×768 resolution)	605812-001
• **33.8-cm** (13.3-in) HD BrightView display assembly for use in computers with WLAN but without webcam (1366×768 resolution)	605811-001
• **33.8-cm** (13.3-in) HD AntiGlare display assembly for use in computers equipped with webcam and WLAN (1366×768 resolution)	605810-001
• **33.8-cm** (13.3-in) HD AntiGlare display assembly for use in computers with WLAN but without webcam (1366×768 resolution)	605809-001
• **33.8-cm** (13.3-in) HD AntiGlare display assembly for use in computers with WLAN but without webcam (1366×768 resolution), red	616597-001
• **33.8-cm** (13.3-in) HD AntiGlare display assembly for use in computers equipped with webcam and WLAN (1366×768 resolution), red	616598-001
• **33.8-cm** (13.3-in) HD BrightView display assembly for use in computers with WLAN but without webcam (1366×768 resolution), red	616599-001
• **33.8-cm** (13.3-in) HD BrightView display assembly for use in computers equipped with webcam and WLAN (1366×768 resolution), red	616600-001

Before removing the display assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.

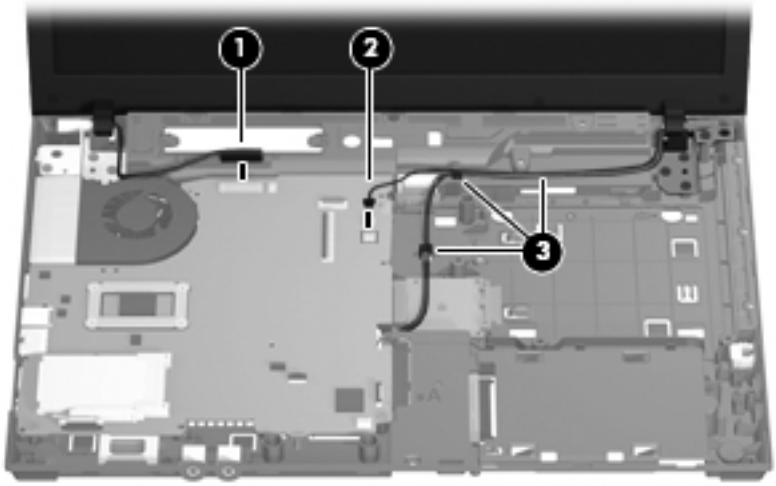
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).
6. Remove the palm rest (see Palm rest on page 68).
7. Remove the keyboard (see Keyboard on page 71).
8. Remove the top cover (see Top cover on page 75).

Remove the display on **39.6-cm** (15.6-in) computers:

1. Orient the computer in its normal position, face up with the display open as far as it will comfortably go.

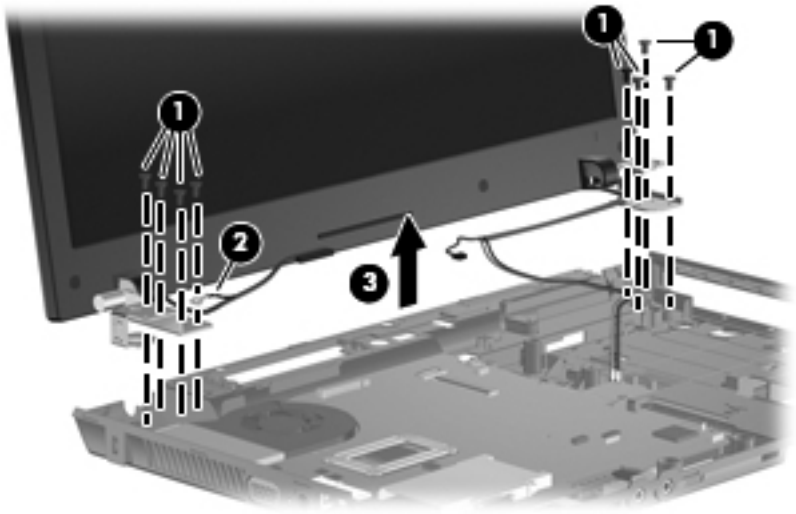
△ **CAUTION:** Support the display assembly when removing the retaining screws. Failure to support the display assembly can result in damage to the display assembly and other computer components.

2. Disconnect the display cable **(1)** and the microphone cable **(2)** from the system board.
3. Release the WLAN cables from the cable run **(3)**, being careful when pulling them through the opening near the hard drive.



4. Remove eight Torx M2.5×6.0 screws **(1)** that secure the display to the base enclosure. Be careful of the grounding cable **(2)** that is secured by one of the hinge retaining screws.

5. Lift the display assembly **(3)** from the base enclosure.

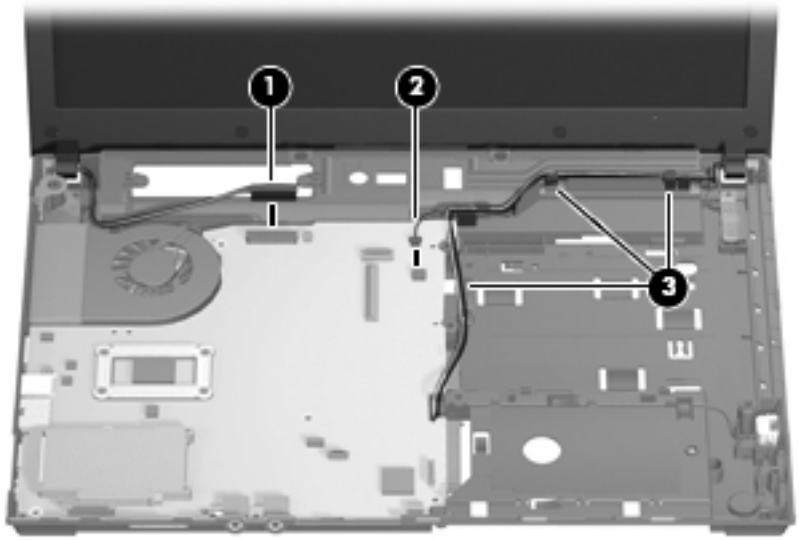


Remove the display on **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers:

1. Orient the computer in its normal position, face up with the display open as far as it will comfortably go.

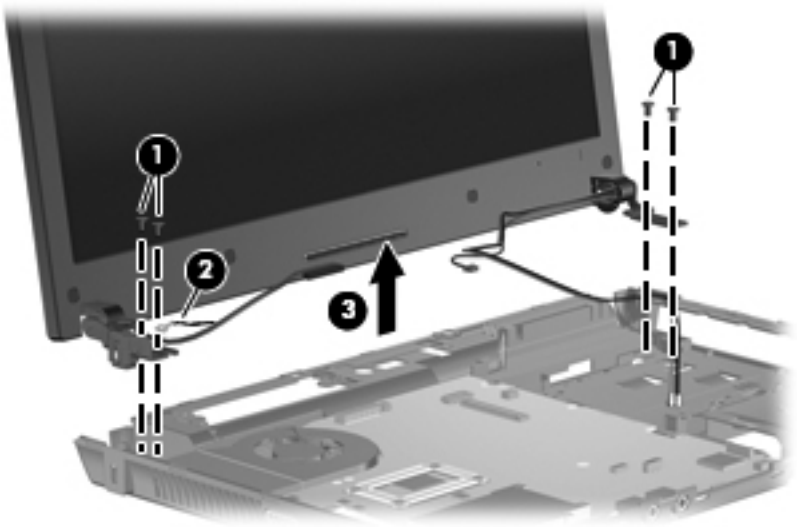
△ **CAUTION:** Support the display assembly when removing the retaining screws. Failure to support the display assembly can result in damage to the display assembly and other computer components.

2. Disconnect the display cable **(1)** and the microphone cable **(2)** from the system board.
3. Release the WLAN cables from the cable run **(3)**, being careful when pulling them through the opening near the hard drive.



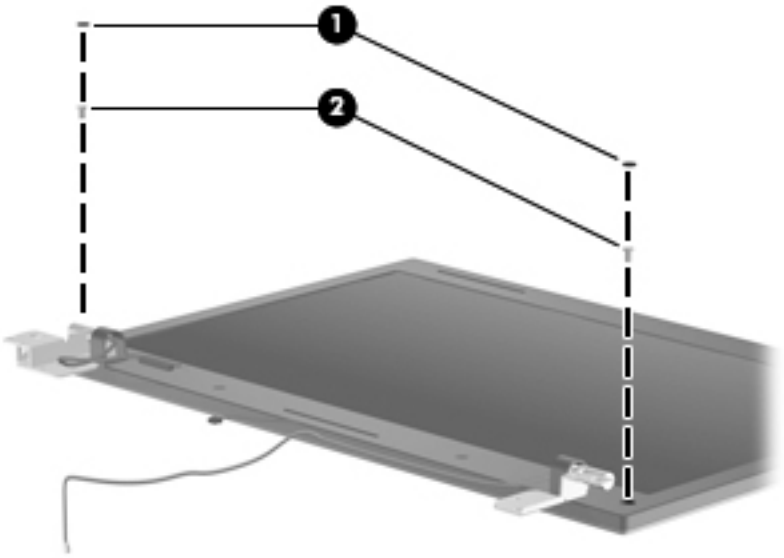
4. Remove four Torx M2.5×6.0 screws **(1)** that secure the display to the base enclosure. Be careful of the grounding cable **(2)** that is secured by one of the hinge retaining screws.

5. Lift the display assembly **(3)** from the base enclosure.



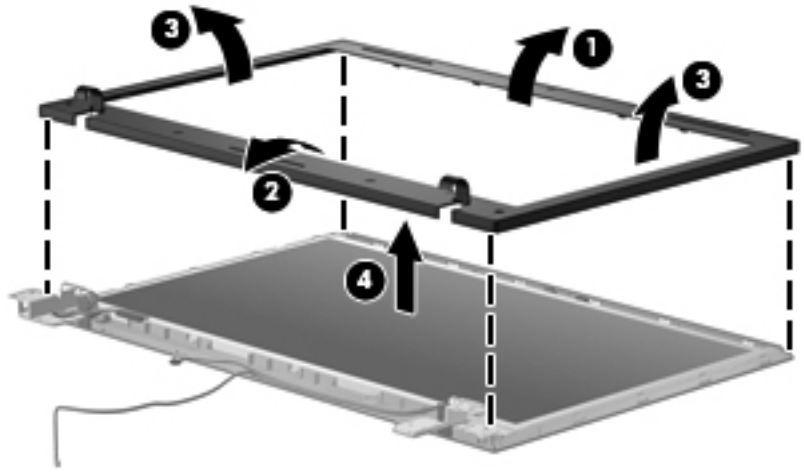
Remove the display assembly:

1. If it is necessary to replace the display bezel, display enclosure, or display hinges, remove the two mylar screw covers **(1)** and the 2 Phillips PM2.5×4.0 screws **(2)** that secure the display bezel to the display assembly. The screw covers for the 39.6-cm (15.6-in) computer are available in the Rubber Kit, spare part number 608931-001, and for the 35.6-cm (14.0-in) or 33.8-cm (13.3-in) computer are available in the Rubber Kit, spare part number 605789-001.

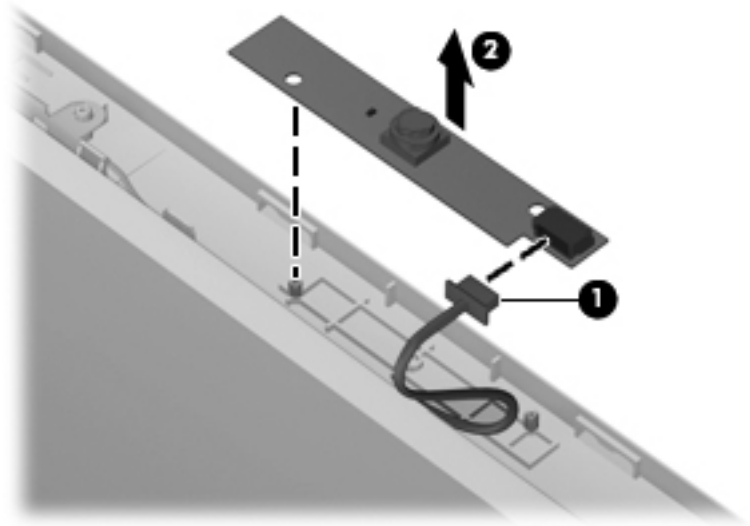


2. Starting at the top of the display, flex the bezel **(1)** and work around the periphery of the bezel **(2)** and **(3)** to release the bezel from the display enclosure .

3. Lift the bezel **(4)** from the display enclosure.



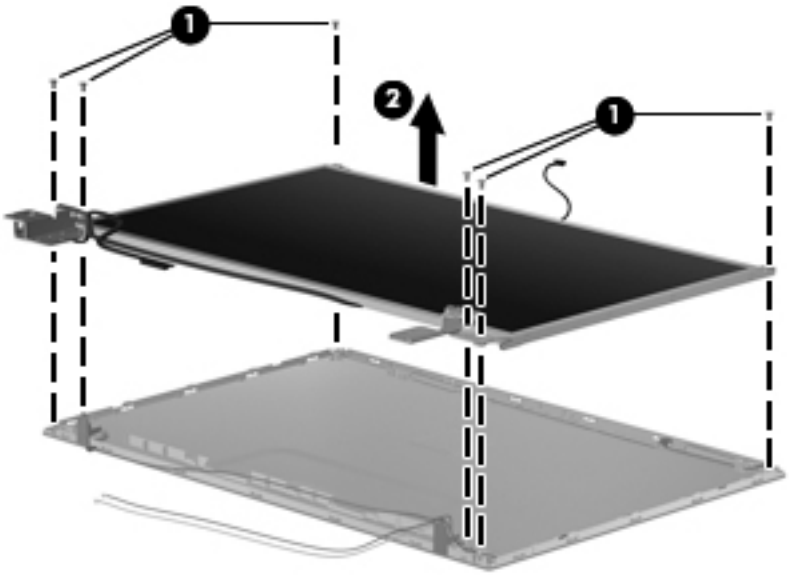
4. If it is necessary to replace the webcam module, disconnect the webcam cable from the module **(1)**, and pull the webcam module **(2)** that is attached with adhesive off the display enclosure. The webcam module can be ordered by using spare part number 611026-001.



NOTE: To replace the webcam module in the display enclosure, align the holes on the webcam module with the pins on the display enclosure and press onto the double-sided tape.

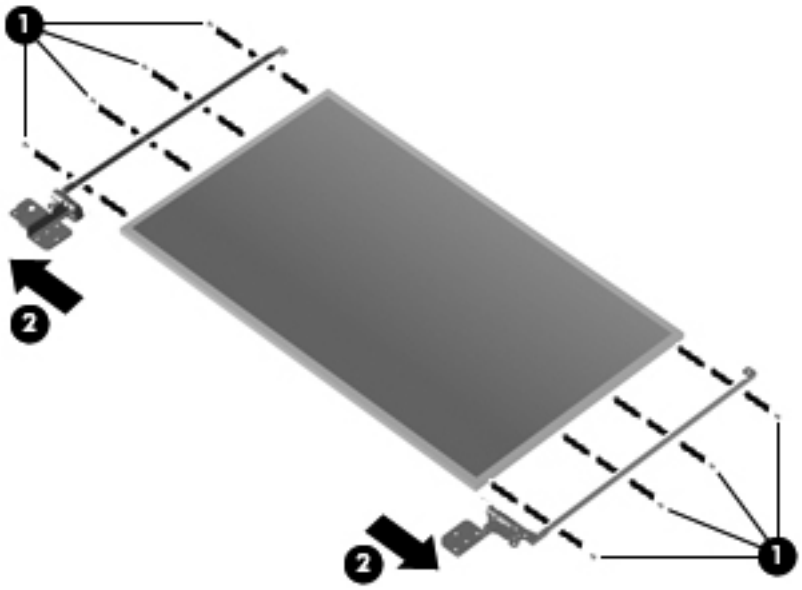
5. If it is necessary to replace the display hinges, remove the six Torx M2.5×6.0 screws **(1)** that secure the display panel to the display enclosure.

6. Lift the display panel up and out the housing **(2)**.



Remove the display hinges from a **39.6-cm** (15.6-in) computer:

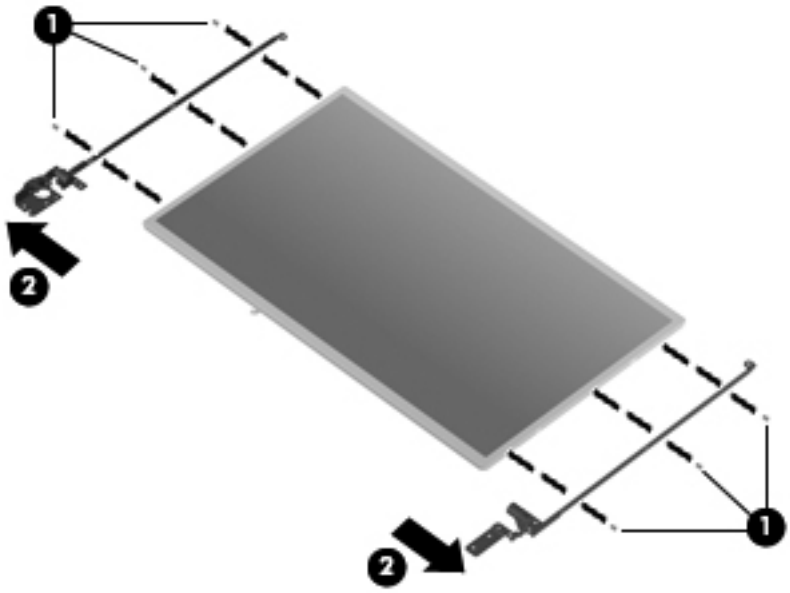
1. Remove the eight Phillips PM2.0×3.0 screws **(1)** that secure the display hinges to the display panel.
2. Remove the display hinges **(2)** by pulling them away from the display panel. The left and right display hinges are available in the Hinge Kit, spare part number 605769-001.



Remove the display hinges from **35.6-cm** (14.0-in) or **33.8-cm** (13.3-in) computers:

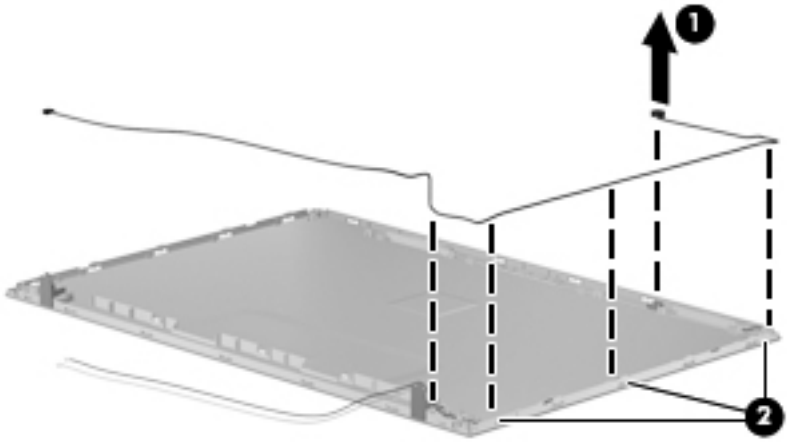
1. Remove the six Phillips PM2.0×3.0 screws **(1)** that secure the display hinges to the display panel

2. Remove the display hinges **(2)** by pulling them away from the display panel. The left and right display hinges are available in the Hinge Kit, spare part number 605768-001..



Remove the microphone:

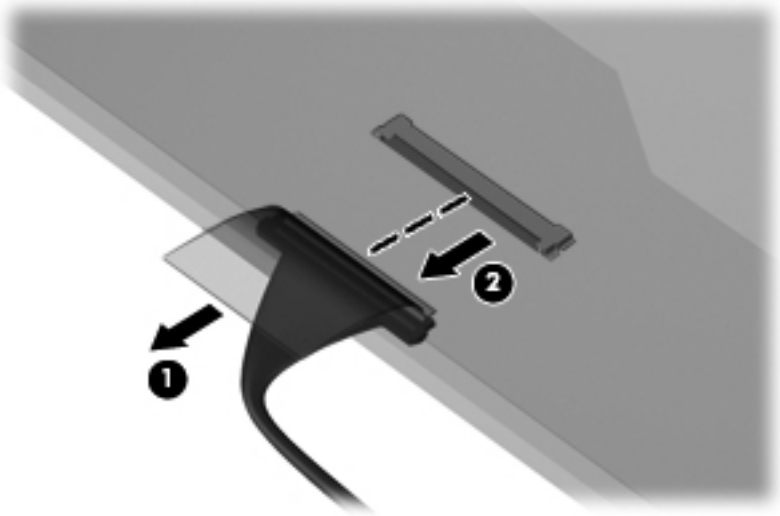
1. Pull the microphone from its socket **(1)** on the display enclosure.
2. Remove the microphone cable from the raceway **(2)** in the display enclosure.



To remove the display cable assembly:

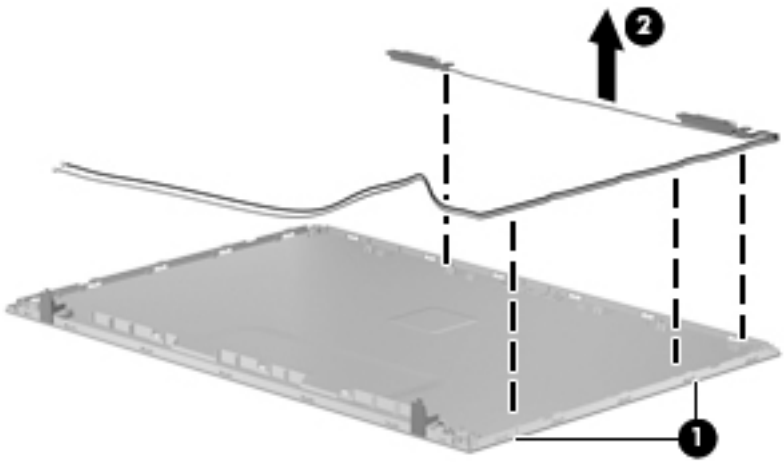
1. Place the display panel face down on a protected soft surface and remove the clear protector **(1)** that covers the cable connector on the back of the panel.

2. Remove the display cable **(2)** from the back of the display panel.



To remove the WLAN antennas:

1. Route the antenna cables **(1)** out of the routing channels in the inside of the display enclosure.
2. Peel the WLAN antenna receivers **(2)** from the enclosure



Reverse this procedure to assemble the display assembly.

System board

NOTE: The system board spare part kit includes replacement thermal material.

Description	Spare part number
System board with UMA graphics and RTC battery with RS880M chipset	611803-001
System board with discrete graphics and RTC battery with RS880M chipset	611802-001

Before removing the system board, follow these steps:

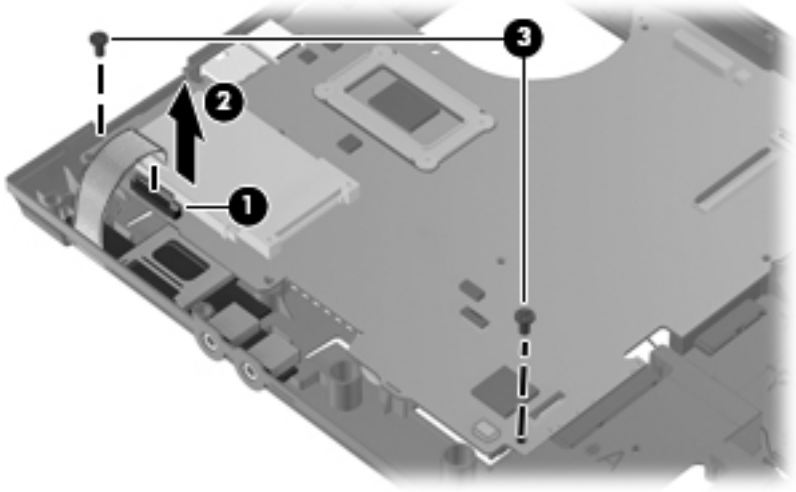
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).
6. Remove the hard drive (see Hard drive on page 54).
7. Remove the optical drive (see Optical drive on page 61).
8. Remove the fan (see Fan on page 63).
9. Remove the palm rest (see Palm rest on page 68).
10. Remove the keyboard (see Keyboard on page 71).
11. Remove the top cover (see Top cover on page 75).

When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

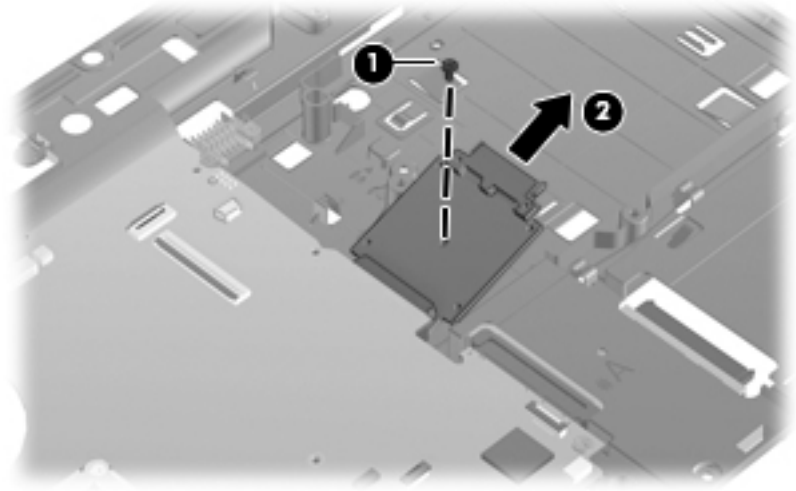
- Memory module (see Memory module on page 57)
- WLAN module (see WLAN module on page 59)
- Modem module (see Modem module on page 101)
- Heat sink (see Heat sink on page 64)
- Processor (see Processor on page 66)
- Audio board (see Audio board on page 104)

Remove the system board on a **39.6-cm** (15.6-in) computer:

1. Position the computer with the front toward you.
2. Release the audio ZIF connector **(1)** and disconnect the cable **(2)** from the left edge of the system board.
3. Remove the two Phillips M2.0×3.0 screws **(3)** that secure the system board to the base enclosure.

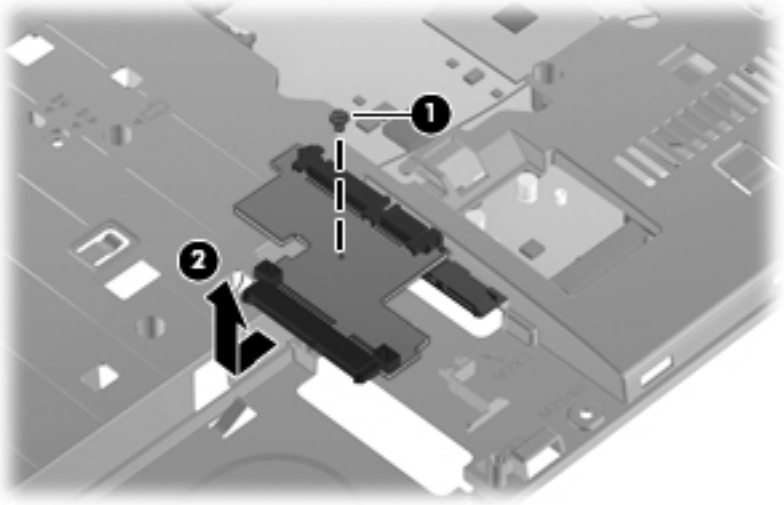


4. Remove the optical drive extender by first removing the Phillips PM2.0×3.0 screw **(1)** that secures the extender to the base enclosure.
5. Lift the system board slightly and then pull the extender straight out **(2)** from the system board.

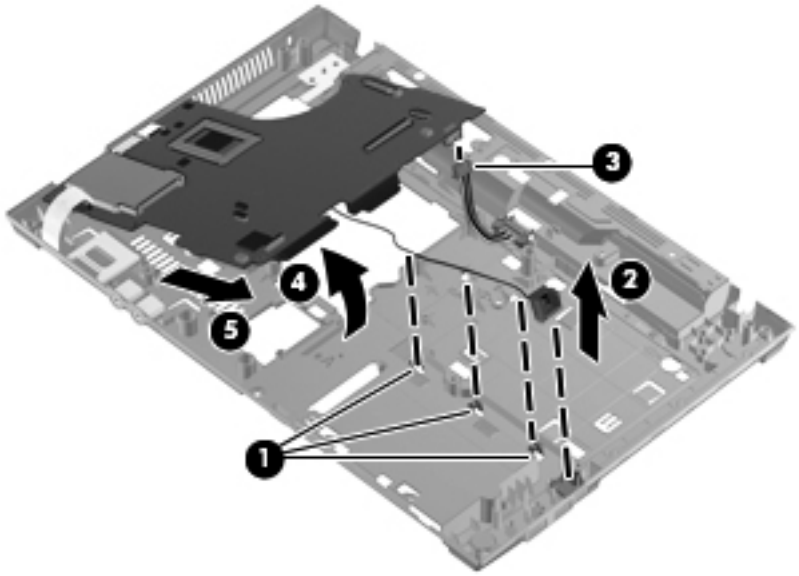


6. Remove the hard drive extender by first removing the Phillips PM2.0×3.0 screw **(1)** that secures the extender to the base enclosure.

7. Pull the extender out **(2)** of the system board and lift it from the base enclosure.



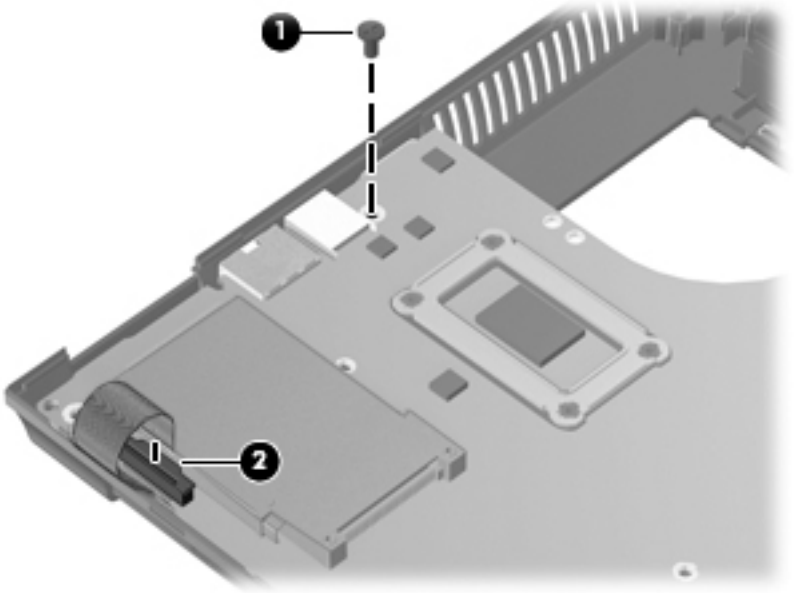
8. Release the RJ-11 cable from the cable routing area, lift the connector from the base enclosure **(1)**, and disconnect the cable **(2)** from the system board.
9. Disconnect the main battery cable **(3)** from the bottom of the system board.
10. Lift the system board at an angle **(4)** and slide it **(5)** out of the base enclosure.



Remove the system board on **35.6-cm** (14.0-in) or **33.8-cm** (13.3-in) computers:

1. Position the computer with the front toward you.

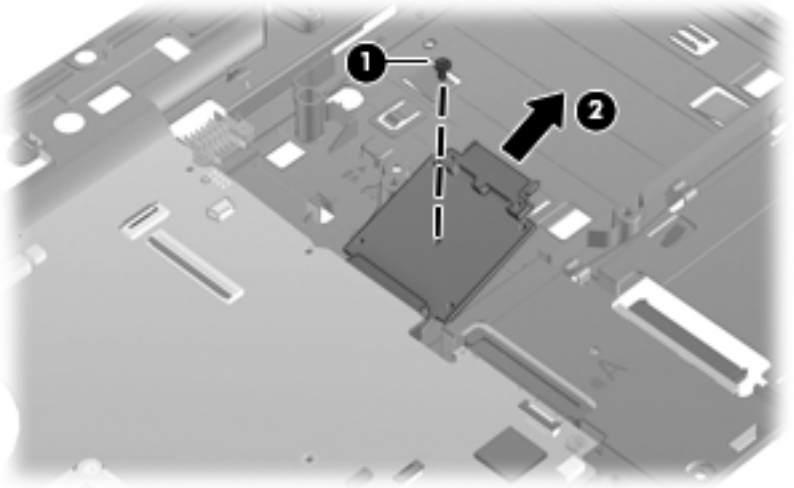
2. Remove the Phillips PM2.0×3.0 screw **(1)** that secures the board to the base enclosure, disconnect the audio ZIF connector and remove the flat-ribbon cable **(2)** from the system board.



3. Remove the optical drive extender on the **35.6-cm** (14.0-in) computer by first removing the Phillips PM2.0×3.0 screw **(1)** that secures the extender to the base enclosure.

NOTE: **33.8-cm** (13.3-in) computers do not use an optical drive extender.

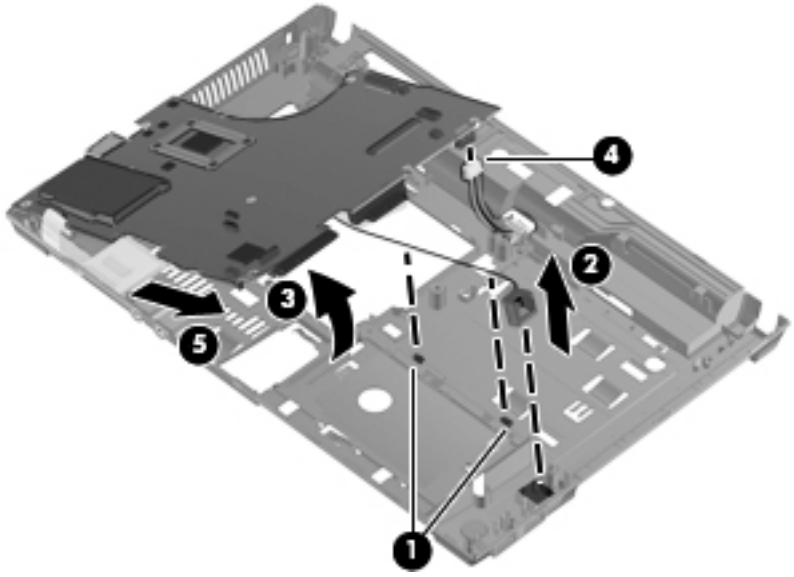
4. Lift the system board slightly and then pull the extender straight out **(2)** from the system board.



5. Release the RJ-11 cable from the cable routing area, lift the connector from the base enclosure **(1)**, and disconnect the connector **(2)** from the system board.

6. Lift the system board at an angle **(3)** and disconnect the main battery cable **(4)** from the bottom of the board.

7. Slide the system board **(5)** out of the base enclosure.



Reverse this procedure to install the system board.

Main battery connector

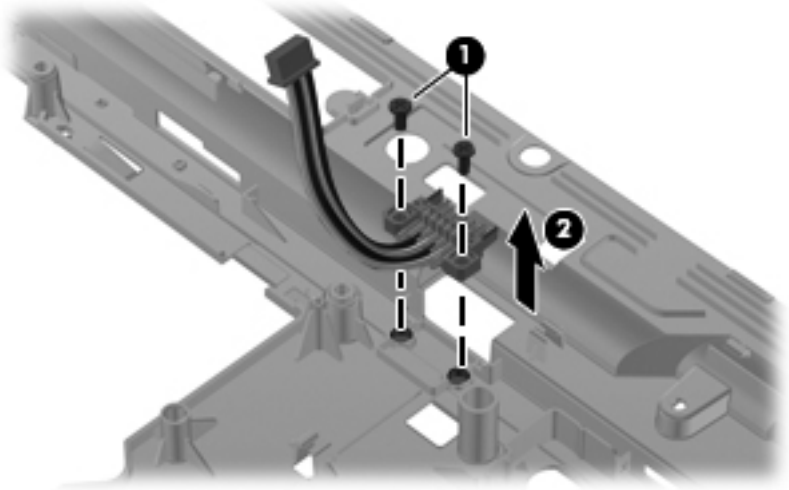
The main battery cable is included in Cable Kit 605793-001.

Before removing the main battery cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).
6. Remove the hard drive (see Hard drive on page 54).
7. Remove the optical drive (see Optical drive on page 61).
8. Remove the fan (see Fan on page 63).
9. Remove the palm rest (see Palm rest on page 68).
10. Remove the keyboard (see Keyboard on page 71).
11. Remove the top cover (see Top cover on page 75).
12. Remove the system board (seeSystem board on page 94).

Remove the main battery cable:

1. Remove the two Phillips PM2.5×4.0 screws **(1)** that secure the connector to the base enclosure.
2. Lift the connector up **(2)** and out of the base enclosure.



Reverse the procedure to install the main battery connector.

RTC battery

The spare part number for the RTC battery is 449137-001.

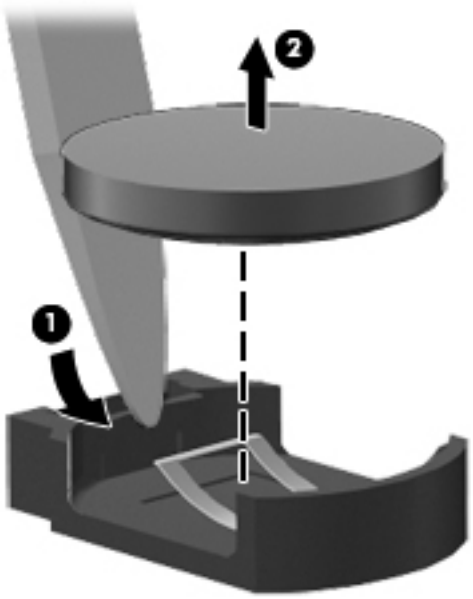
Before removing the RTC battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).
6. Remove the hard drive (see Hard drive on page 54).
7. Remove the optical drive (see Optical drive on page 61).
8. Remove the fan (see Fan on page 63).
9. Remove the palm rest (see Palm rest on page 68).
10. Remove the keyboard (see Keyboard on page 71).
11. Remove the top cover (see Top cover on page 75).
12. Remove the system board (seeSystem board on page 94).

Remove the RTC battery:

1. Position the computer right-side up with the front toward you.

2. Release the RTC battery from the socket **(1)** on the system board and lift the battery **(2)** up.



Reverse this procedure to install the RTC battery.

Modem module

Description	Spare part number
For use in all countries and regions except Australia and New Zealand	510100-001
For use only in Australia and New Zealand	510100-011

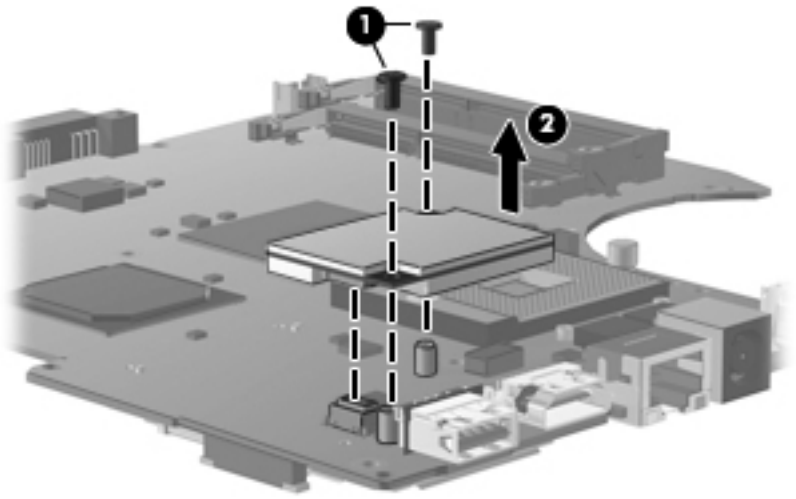
Before removing the modem module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).
6. Remove the hard drive (see Hard drive on page 54).
7. Remove the optical drive (see Optical drive on page 61).
8. Remove the fan (see Fan on page 63).
9. Remove the palm rest (see Palm rest on page 68).

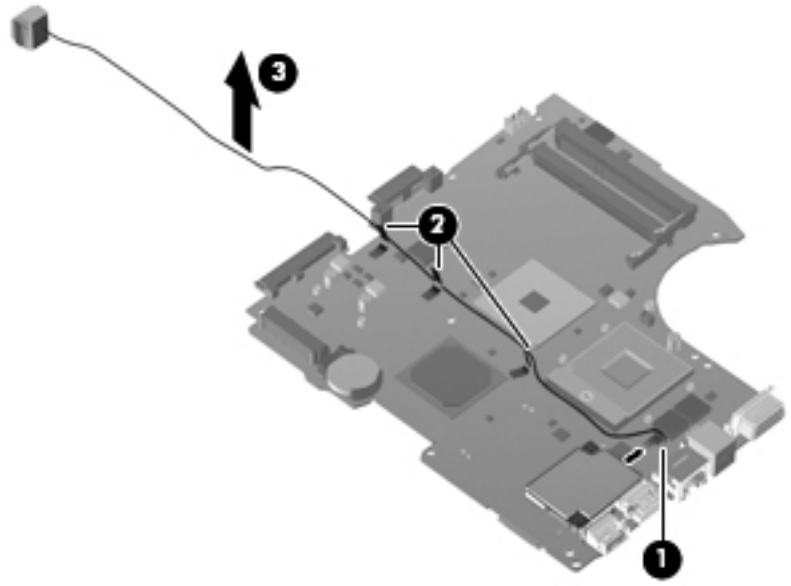
10. Remove the keyboard (see Keyboard on page 71).
11. Remove the top cover (see Top cover on page 75).
12. Remove the system board (seeSystem board on page 94).

Remove the modem module:

1. Position the computer right-side up with the front toward you.
2. Remove the two Phillips PM2.5×3.0 screws **(1)** that secure the modem module to the system board.
3. Lift the modem module **(2)** straight up from the system board.



4. With the modem raised, disconnect the RJ-11 cable **(1)** from beneath the modem.
5. Remove the tape **(2)** that secures the cable to the system board and then, remove the cable **(3)**.



Reverse this procedure to install the modem module.

Audio board

Description	Spare part numbers
Audio board	620608-001
Audio board for use on system boards with UMA graphics subsystem	622614-001

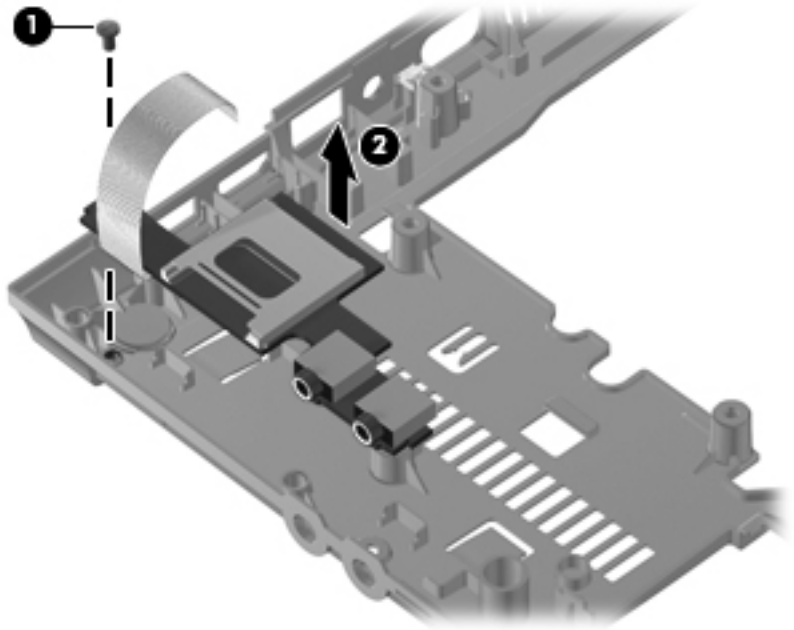
Before removing the audio board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 51).
5. Remove the service door (see Service door on page 52).
6. Remove the hard drive (see Hard drive on page 54).
7. Remove the optical drive (see Optical drive on page 61).
8. Remove the fan (see Fan on page 63).
9. Remove the palm rest (see Palm rest on page 68).
10. Remove the keyboard (see Keyboard on page 71).
11. Remove the top cover (see Top cover on page 75).
12. Remove the system board (seeSystem board on page 94).

Remove the audio board from **39.6-cm** (15.6-in) computers:

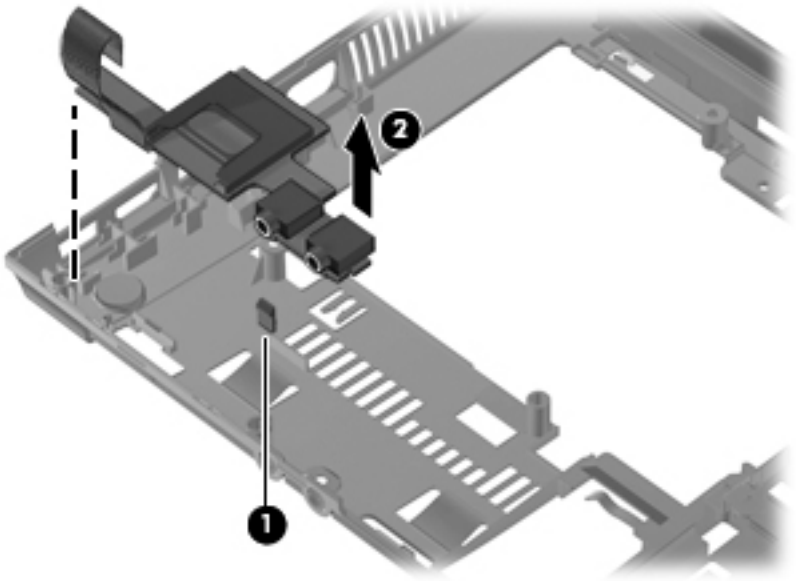
1. Position the computer right-side up with the front toward you.

2. Remove the Phillips PM2.0×3.0 screw **(1)** that secures the audio board to the base enclosure and then remove the audio board **(2)**.



Remove the audio board from **35.6-cm** (14.0-in) and **33.8-cm** (13.3-in) computers:

1. Release the latch **(1)** that secures the board to the base enclosure.
2. Lift the audio board **(2)** from the base enclosure.



Reverse this procedure to install the audio board.

5 Computer Setup

Computer Setup in Windows

Starting Computer Setup

Computer Setup is a preinstalled, ROM-based utility that can be used even when the operating system is not working or will not load.

NOTE: Some of the Computer Setup menu items listed in this guide may not be supported by your computer.

NOTE: An external keyboard or mouse connected to a USB port can be used with Computer Setup only if USB legacy support is enabled.

To start Computer Setup, follow these steps:

1. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.
2. Press f10 to enter BIOS Setup.

Using Computer Setup

Navigating and selecting in Computer Setup

The information and settings in Computer Setup are accessed from the File, Security, and System Configuration menus.

To navigate and select in Computer Setup, follow these steps:

1. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.
   - To select a menu or a menu item, use the tab key and the keyboard arrow keys and then press enter, or use a pointing device to click the item.
   - To scroll up and down, click the up arrow or the down arrow in the upper-right corner of the screen, or use the up arrow key or the down arrow key.
   - To close open dialog boxes and return to the main Computer Setup screen, press esc, and then follow the on-screen instructions.

NOTE: You can use either a pointing device (TouchPad, pointing stick, or USB mouse) or the keyboard to navigate and make selections in Computer Setup.

2. Press f10 to enter BIOS Setup.
3. Select the **File**, **Security**, or **System Configuration** menu.

To exit Computer Setup menus, choose one of the following methods:

- To exit Computer Setup menus without saving your changes, click the **Exit** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

  – or –

  Use the tab key and the arrow keys to select **File > Ignore Changes and Exit**, and then press enter.

  – or –

- To save your changes and exit Computer Setup menus, click the **Save** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

  – or –

  Use the tab key and the arrow keys to select **File > Save Changes and Exit**, and then press enter.

Your changes go into effect when the computer restarts.

Restoring factory settings in Computer Setup

NOTE: Restoring defaults will not change the hard drive mode.

To return all settings in Computer Setup to the values that were set at the factory, follow these steps:

1. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.
2. Press f10 to enter BIOS Setup.
3. Use a pointing device or the arrow keys to select **File > Restore Defaults**.
4. Follow the on-screen instructions.
5. To save your changes and exit, click the **Save** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

   – or –

   Use the arrow keys to select **File > Save Changes and Exit**, and then press enter.

Your changes go into effect when the computer restarts.

NOTE: Your password settings and security settings are not changed when you restore the factory settings.

Computer Setup menus

The menu tables in this section provide an overview of Computer Setup options.

NOTE: Some of the Computer Setup menu items listed in this guide may not be supported by your computer.

File menu

Select	To do this
System Information	• View identification information for the computer and the batteries in the system. • View specification information for the processor, cache and memory size, system ROM, video revision, and keyboard controller version.
Set System Date and Time	Set or change the date and time on the computer.
System Diagnostics	Displays the following information: • System information ◦ Identification information for the computer and the batteries in the system. ◦ Specification information for the processor, cache and memory size, system ROM, video revision, and keyboard controller version. • Start-up Test—Verifies the system components needed for starting the computer. • Run-in Test—Runs a comprehensive check on system memory. • Hard Disk Test—Runs a comprehensive self-test on any hard drive in the system. • Memory Test—Runs a comprehensive test on any memory installed in the computer. • Battery Test—Runs a comprehensive test on any batteries installed in the computer. • Error Log—Displays a log file if any errors have occurred.
Restore defaults	Replace the configuration settings in Computer Setup with the original factory settings. (Hard drive mode, password settings, and security settings are not changed when you restore the factory settings.)
Reset BIOS security to factory default	Restore the BIOS security settings to the factory default.

Select	To do this
Ignore Changes and Exit	Cancel any changes entered during the current session. Then exit and restart the computer.
Save Changes and Exit	Save any changes entered during the current session. Then exit and restart the computer. Your changes go into effect when the computer restarts.

Security menu

NOTE: Some of the menu items listed in this section may not be supported by your computer.

Select	To do this
Setup BIOS Administrator Password	Set up a BIOS administrator password.
User Management > Create a New BIOS User Account (requires a BIOS administrator password)	• Select from a list of BIOS users. • Select from a list of ProtectTools users.
Password Policy (requires a BIOS administrator password)	Revise password policy criteria.
HP SpareKey	Enable/disable HP SpareKey (enabled by default).
Always Prompt for HP SpareKey Enrollment	Enable/disable HP SpareKey enrollment (enabled by default).
Fingerprint Reset on Reboot (If Present)	Reset/clear the fingerprint reader ownership (select models only; disabled by default).
Change Password	Enter, change, or delete a BIOS administrator password.
HP SpareKey Enrollment	Enroll or reset HP SpareKey, which is a set of security questions and answers used if you forget your password.
Anti Theft > AT-p (select models only)	Enable/disable Anti-theft Protection.
DriveLock Passwords	• Enable/disable DriveLock on any computer hard drive (enabled by default). • Change a DriveLock user password or master password. **NOTE:** DriveLock settings are accessible only when you enter Computer Setup by turning on (not restarting) the computer.
Automatic DriveLock	Enable/disable Automatic DriveLock support (disabled by default).
Disk Sanitizer	Run Disk Sanitizer to destroy all existing data on the primary hard drive or the drive in the upgrade bay. **CAUTION:** If you run Disk Sanitizer, the data on the selected drive is destroyed permanently.
System IDs	Enter a user-defined computer asset tracking number and ownership tag.

System Configuration menu

NOTE: Some of the listed System Configuration options may not be supported by your computer.

Select	To do this
Language	Change the Computer Setup language.
Boot Options	• Set a Startup Menu delay (in seconds). • Set the MultiBoot Express Boot Popup delay in seconds. • Enable/disable custom logo (disabled by default). • Enable/disable display diagnostic URL (enabled by default). • Enable/disable CD-ROM boot (enabled by default). • Enable/disable SD Card boot (enabled by default). • Enable/disable floppy boot (enabled by default). • Enable/disable PXE Internal NIC boot (enabled by default). • Enable/Disable Unified Extensible Firmware Interface (UEFI) Boot Mode (disabled by default). • Set the legacy boot order.
Device Configurations	• Enable/disable USB legacy support (enabled by default). When enabled, USB legacy support allows the following: ◦ Use of a USB keyboard in Computer Setup even when a Windows operating system is not running. ◦ Startup from bootable USB devices, including a hard drive, diskette drive, or optical drive connected by a USB port to the computer. • Select a parallel port mode: ECP (Enhanced Capabilities Port), standard, bidirectional, or EPP (Enhanced Parallel Port). • Enable/disable fan always on while connected to an AC outlet (enabled by default). • Enable/disable Data Execution Prevention (select models only). When enabled, the processor can disable some virus code execution, which helps to improve computer security (enabled by default). • Select a SATA (Serial Advanced Technology Attachment) device mode. The following options are available: ◦ AHCI (Advanced Host Controller Interface) ◦ IDE (Integrated Drive Electronics) ◦ RAID (Redundant Array of Independent Disks) (select models only)

Select	To do this
	NOTE: Availability of these options above varies by computer model. • Enable/disable secondary battery fast charge (enabled by default). • Enable/disable HP QuickLook 2 (enabled by default). • Enable/disable preboot authentication on HP QuickLock boot (enabled by default). • Enable/disable HP QuickWeb (enabled by default). • Enable/disable HP QuickWeb write protect (disabled by default). • Enable/disable virtualization technology (select models only; disabled by default). • Enable/disable Intel TXT (Trust Execution Technology) (select models only; disabled by default). • Enable/disable Multi Core CPU (enabled by default). • Enable/disable Intel HT technology (enabled by default). • Enable/disable wake on USB (enabled by default). • Enable/disable Num lock state at boot (disabled by default).

Select	To do this
Built-In Device Options	• Enable/disable the wireless button state (enabled by default). • Enable/disable embedded WWAN device (select models only; enabled by default). • Enable/disable embedded WLAN device (enabled by default). • Enable/disable embedded Bluetooth® device radio (enabled by default). • Enable/disable the network interface controller (LAN) (enabled by default). • Enable/disable LAN/WLAN device (disabled by default). • Set the wake on LAN state. Options include the following: ◦ Disabled ◦ Boot to Network (set by default) ◦ Follow Boot Order • Enable/disable the ambient light sensor (enabled by default). • Enable/disable the notebook upgrade bay device (enabled by default). • Enable/disable the fingerprint device (enabled by default). • Enable/disable the integrated camera (enabled by default). • Enable/disable the power monitor circuit (enabled by default). • Enable/disable the audio device (enabled by default). • Enable/disable a modem device (enabled by default). • Enable/disable the microphone (enabled by default). • Enable/disable the internal speakers (enabled by default).

Select	To do this
Port Options	**NOTE:** All port options are enabled by default. • Enable/disable the serial port (select models only). • Enable/disable the parallel port (select models only). • Enable/disable the flash media reader. • Enable/disable the USB port. **CAUTION:** Disabling the USB port also disables MultiBay devices and ExpressCard devices on the advanced port replicator. • Enable/disable the 1394 port (select models only). • Enable/disable the ExpressCard slot (select models only). • Enable/disable the eSATA port (select models only).
AMT Options (select models only)	**NOTE:** All AMT options are disabled by default. • Enable/disable firmware verbosity. • Enable/disable AMT setup prompt (Ctrl-P) • Enable/disable USB key provisioning support. • Enable/disable unconfigure AMT on next boot. • Select terminal emulation mode. Options include the following: ◦ ANSI (default setting) ◦ VT100 • Enable/disable firmware progress event support. • Enable/disable initiate Intel CIRA.
Set Security Level	Change, view, or hide security levels for all BIOS menu items.
Restore Security Defaults	Restore the default security settings.

Computer Setup in Linux

Starting Computer Setup

Computer Setup is a preinstalled, ROM-based utility that can be used even when the operating system is not working or will not load.

NOTE: Some of the Computer Setup menu items listed in this guide may not be supported by your computer or your operating system.

NOTE: Pointing devices are not supported in Computer Setup. You must use the keyboard to navigate and make selections.

NOTE: An external keyboard connected by USB can be used with Computer Setup only if USB legacy support is enabled.

To start Computer Setup, follow these steps:

1. Turn on or restart the computer.
2. Before your operating system opens and while the “F10=ROM Based Setup” message is displayed in the lower-left corner of the screen, press f10.

Using Computer Setup

Navigating and selecting in Computer Setup

The information and settings in Computer Setup are accessed from the File, Security, and System Configuration menus.

1. Open Computer Setup by turning on or restarting the computer, and then pressing f10 while the "F10 = ROM Based Setup" message is displayed in the lower-left corner of the screen.

   Because Computer Setup is not operating system based, it does not support the TouchPad. Navigation and selection are by keystroke:

   - To choose a menu or a menu item, use the arrow keys.
   - To select an item, press enter.
   - To close open dialog boxes and return to the main Computer Setup screen, press esc.
   - To view navigation information, press f1.
   - To change the language, press f2.

2. Select the **File, Security, System Configuration** menu.
3. To exit Computer Setup, choose one of the following methods:

   - To exit Computer Setup without saving your preferences, use the arrow keys to select **File > Ignore Changes And Exit**. Then follow the instructions on the screen.
   - To save your preferences and exit Computer Setup, use the arrow keys to select **File > Save Changes And Exit**. Then follow the instructions on the screen.

Your preferences go into effect when the computer restarts.

Restoring factory settings in Computer Setup

To return all settings in Computer Setup to the values that were set at the factory, follow these steps:

1. Open Computer Setup by turning on or restarting the computer, and then pressing f10 while the "F10 = ROM Based Setup" message is displayed in the lower-left corner of the screen.
2. Use the arrow keys to select **File > Restore Defaults**, and then press enter.
3. When the confirmation dialog box opens, press f10.
4. To save your preferences and exit Computer Setup, use the arrow keys to select **File > Save Changes And Exit**. Then follow the instructions on the screen.

Your preferences go into effect when the computer restarts.

NOTE: Your password settings and security settings are not changed when you restore the factory settings.

Computer Setup menus

The menu tables in this section provide an overview of Computer Setup options.

NOTE: Some of the Computer Setup menu items listed in this section may not be supported by your computer or your operating system.

File menu

NOTE: Some of the menu items listed in this section may not be supported by your computer or your operating system.

Select	To do this
System information	• View identification information for the computer. • View specification information for the processor, cache and memory size, and system ROM.
Restore Defaults	Replace the configuration settings in Computer Setup with the original factory settings. (Password settings and security settings are not changed when you restore the factory settings.)
Ignore Changes And Exit	Cancel any changes entered during the current session. Then exit and restart the computer.
Save Changes And Exit	Save any changes entered during the current session. Then exit and restart the computer. Your changes go into effect when the computer restarts.

Security menu

NOTE: Some of the menu items listed in this section may not be supported by your computer or your operating system.

Select	To do this
Setup Password	Enter, change, or delete a setup password.
Password Options	• Enable/disable stringent security. • Enable/disable the password requirement on computer restart.
DriveLock Passwords	• Enable/disable DriveLock on any computer hard drive. • Enter, change, or disable DriveLock on an optional MultiBay hard drive. **NOTE:** DriveLock settings are accessible only when you enter Computer Setup by turning on (not restarting) the computer.
System IDs	Enter a user-defined computer asset tracking number and ownership tag.
Disk Sanitizer	Run Disk Sanitizer to destroy all existing data on the primary hard drive. The following options are available: • Fast: Runs the Disk Sanitizer erase cycle once. • Optimum: Runs the Disk Sanitizer erase cycle 3 times. • Custom: Allows you to select the desired number of Disk Sanitizer erase cycles from a list. **CAUTION:** If you run Disk Sanitizer, the data on the primary hard drive is destroyed permanently.

Diagnostics menu

NOTE: Some of the menu items listed in this section may not be supported by your computer or your operating system.

Select	To do this
HDD Self-Test Options	Run a comprehensive self-test on any hard drive in the system or on any optional MultiBay hard drive.
Memory Check	Run a comprehensive check on system memory.

System Configuration menu

NOTE: Some of the menu items listed in this section may not be supported by your computer or your operating system.

Select	To do this
Language	Change the Computer Setup language.
Boot options	• Set an f9, f10, and f12 delay when starting up. • Enable/disable CD-ROM boot. • Enable/disable floppy boot. • Enable/disable internal network adapter boot. • Enable/disable MultiBoot, which sets a boot order that can include most boot devices in the system. • Set the Express Boot Popup delay in seconds. • Set the boot order. ◦ 1st boot device: USB CD-ROM ◦ 2nd boot device: USB floppy ◦ 3rd boot device: USB SuperDisk ◦ 4th boot device: Notebook hard drive ◦ 5th boot device: USB hard disk ◦ 6th boot device: Network controller
Device Configurations	• Swap the functions of the fn key and left ctrl key. • Enable/disable USB legacy support. When enabled, USB legacy support allows the following: ◦ Use of a USB keyboard in Computer Setup even when a your operating system is not running. ◦ Startup from bootable USB devices, including a hard drive, diskette drive, or optical drive connected by a USB port to the computer. • Enable/disable BIOS DMA data transfers. • Enable/disable fan always on while connected to an AC outlet. • Enable/disable data execution prevention. • Enable/disable LAN power saving mode. • Enable/disable SATA Native Mode. • Enable/disable Dual Core CPU. • Enable/disable HDD translation mode.

Select	To do this
Built-in device options	• Enable/disable embedded WLAN Device Radio. • Enable/disable embedded Bluetooth Device Radio. • Enable/disable Network Interface Controller (NIC) • Enable/disable LAN/WLAN Switching. • Enable/disable Wake on LAN. • Enable/disable the integrated camera (webcam)
Port options	• Enable/disable USB port. • Enable/disable ExpressCard slot.

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions – 39.6-cm (15.6-in)		
Depth	24.96 cm	9.83 in
Width	37.18 cm	14.6 in
Height (front to rear)	2.75 to 3.55 cm	1.09 to 1.40 in
Dimensions – 35.6-cm (14.0-in)		
Depth	22.8 cm	8.98 in
Width	32.3 cm	12.67 in
Height (front to rear)	2.68 to 3.48 cm	1.06 to 1.38 in
Dimensions – 33.8-cm (13.3-in)		
Depth	22.8 cm	8.98 in
Width	32.3 cm	12.67 in
Height (front to rear)	2.68 to 3.48 cm	1.06 to 1.38 in
Weight – 39.6-cm (15.6-in) (equipped with optical drive, WXGA display assembly, 1 memory module, hard drive, and 9-cell battery)	< 2.59 kg	< 5.70 lbs
Weight – 35.6-cm (14.0-in) (equipped with optical drive, WXGA display assembly, 1 memory module, hard drive, and 6-cell battery)	< 2.26 kg	< 5.00 lbs
Weight – 33.8-cm (13.3-in) (equipped with optical drive, WXGA display assembly, 1 memory module, hard drive, and 6-cell battery)	2.04 kg	4.5 lbs
Input power		
Operating voltage	18.5 V dc @ 4.74 A – 90 W	
Operating current	4.74 A	
Temperature		
Operating (not writing to optical disc)	0°C to 35°C	32°F to 95°F

	Metric	U.S.
Operating (writing to optical disc)	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft
Shock		
Operating	125 g, 2 ms, half-sine	
Nonoperating	200 g, 2 ms, half-sine	
Random vibration		
Operating	0.75 g zero-to-peak, 10 Hz to 500 Hz, 0.25 oct/min sweep rate	
Nonoperating	1.50 g zero-to-peak, 10 Hz to 500 Hz, 0.5 oct/min sweep rate	

NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The computer operates well within this range of temperatures.

39.6-cm (15.6-in) display specifications

	Metric	U.S.
Dimensions		
Height	19.35 cm	7.6 in
Width	34.42 cm	13.5 in
Diagonal	39.49 cm	15.6 in
Number of colors	262,000	
Contrast ratio	500:1 (typical BrightView), 400:1 (typical AntiGlare)	
Brightness	200 nits (typical)	
Pixel resolution		
Format	1366 × 768	
Configuration	RGB	
Backlight	LED	
Response Time	16 ms	

	Metric	U.S.
Total power consumption	5.6 W (max)	
Viewing angle @CR>10	5 VA	

35.6-cm (14.0-in) display specifications

	Metric	U.S.
Dimensions		
Height	17.40 cm	6.9 in
Width	30.94 cm	12.2 in
Diagonal	35.50 cm	14.0 in
Number of colors	262,000	
Contrast ratio	500:1 (min BrightView), 400:1 (min AntiGlare))	
Brightness	200 nits (typical)	
Pixel resolution		
Format	1366 × 768	
Configuration	RGB	
Backlight	LED	
Response Time	8 ms (typ)	
Total power consumption	3.8 W (max)	
Viewing angle @ CR>10	SVA	

33.8-cm (13.3-in) display specifications

	Metric	U.S.
Dimensions		
Height	16.50 cm	6.5 in
Width	29.34 cm	11.5 in
Diagonal	33.66 cm	13.3 in
Number of colors	262,000	
Contrast ratio	500:1 (min BrightView), 400:1 (min AntiGlare))	
Brightness	200 nits (typical)	
Pixel resolution		
Format	1366 × 768	
Configuration	RGB	
Backlight	LED	
Response Time	8 ms (typ)	
Total power consumption	4.5 W (max)	
Viewing angle @ CR>10	SVA	

Hard drive specifications

	500-GB*	320-GB*	250-GB*	160-GB*
Dimensions				
Height	9.5 mm	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm	70 mm
Weight	101 g	101 g	101 g	101 g
Interface type	SATA	SATA	SATA	SATA
Transfer rate	100 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec
Security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)				
Single track	3 ms	3 ms	3 ms	3 ms
Average	13 ms	13 ms	13 ms	13 ms
Maximum	24 ms	24 ms	24 ms	24 ms
Logical blocks	1,048,576,000	625,141,400	488,376,280	312,560,640
Disc rotational speed	5400 rpm	5400 rpm	7200 and 5400 rpm	7200 and 5400 rpm
Operating temperature	5°C to 55°C (41°F to 131°F)	5°C to 55°C (41°F to 131°F)	5°C to 55°C (41°F to 131°F)	5°C to 55°C (41°F to 131°F)

*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications may differ slightly.

NOTE: Certain restrictions and exclusions apply. Contact technical support for details.

DVD-ROM Drive specifications

Applicable disc	DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18, CD-ROM (Mode 1 and 2), CD Digital Audio, CD-XA ready (Mode 2, Form 1 and Form 2), CD-I (Mode 2, Form 1 and Form 2), CD-R, CD-RW, Photo CD (single and multisession), CD-Bridge	
Access time	**CD**	**DVD**
Random	< 100 ms	< 125 ms
Cache buffer	512 KB	
Data transfer rate		
CD-R (24X)	3600 KB/s (150 KB/s at 1X CD rate)	
CD-RW (10X)	1500 KB/s (150 KB/s at 1X CD rate)	
CD-ROM (24X)	3600 KB/s (150 KB/s at 1X CD rate)	
DVD (8X)	10,800 KB/s (1,352 KB/s at 1X DVD rate)	
Multiword DMA mode 2	16.6 MB/s	

DVD±RW Double-Layer Combo Drive specifications

Applicable disc	**Read:**	**Write:**
	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	CD-R and CD-RW DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM
Access time	**CD**	**DVD**
Random	< 175 ms	< 230 ms
Cache buffer	2 MB	
Data transfer rate		
24X CD-ROM	3,600 KB/sec	
8X DVD-ROM	10,800 KB/sec	
24X CD-R	3,600 KB/sec	
16X CD-RW	2,400 KB/sec	
8X DVD+R	10,800 KB/sec	
4X DVD+RW	5,400 KB/sec	
8X DVD-R	10,800 KB/sec	
4X DVD-RW	5,400 KB/sec	
2.4X DVD+R(9)	2,700 KB/sec	
5X DVD-RAM	6,750 KB/sec	
Transfer mode	Multiword DMA Mode	

7 Backup and recovery

Backup and recovery in Windows 7

Overview

To protect your information, use Windows Backup and Restore to back up individual files and folders, back up your entire hard drive (select models only), create system repair discs (select models only), or create system restore points. In case of system failure, you can use the backup files to restore the contents of your computer.

Backup and Restore provides the following options:

- Creating a system repair disc (select models only)
- Backing up individual files and folders
- Creating a system image (select models only)
- Scheduling automatic backups (select models only)
- Creating system restore points
- Recovering individual files
- Restoring the computer to a previous state
- Recovering information using recovery tools

NOTE: For detailed instructions, perform a search for these topics in Help and Support.

NOTE: In case of system instability, HP recommends that you print the recovery procedures and save them for later use.

Backing up your information

Recovery after a system failure is as complete as your most current backup. You should create system repair discs (select models only) and your initial backup immediately after software setup. As you add new software and data files, you should continue to back up your system on a regular basis to maintain a reasonably current backup. The system repair discs (select models only) are used to start up (boot) the computer and repair the operating system in case of system instability or failure. Your initial and subsequent backups allow you to restore your data and settings if a failure occurs.

You can back up your information to an optional external hard drive, a network drive, or discs.

Note the following when backing up:

- Store personal files in the Documents folder, and back it up regularly.
- Back up templates that are stored in their associated programs.
- Save customized settings that appear in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time-saver if you have to reset your preferences.

  To create a screen shot:

  1. Display the screen you want to save.
  2. Copy the screen image:

     To copy only the active window, press alt+fn+prt sc.

     To copy the entire screen, press fn+prt sc.
  3. Open a word-processing document, and then select **Edit > Paste**.

     The screen image is added to the document.
  4. Save the document.
- When backing up to discs, use any of the following types of discs (purchased separately): CD-R, CD-RW, DVD+R, DVD+R DL, DVD-R, DVD-R DL, or DVD±RW. The discs you use will depend on the type of optical drive installed in your computer.

NOTE: DVDs and DVDs with double-layer (DL) support store more information than CDs, so using them for backup reduces the number of recovery discs required.

- When backing up to discs, number each disc before inserting it into the optical drive of the computer.

To create a backup using Backup and Restore , follow these steps:

NOTE: Be sure that the computer is connected to AC power before you start the backup process.

NOTE: The backup process may take over an hour, depending on file size and the speed of the computer.

1. Select **Start > All Programs > Maintenance > Backup and Restore**.
2. Follow the on-screen instructions to set up your backup, create a system image (select models only), or create a system repair disc (select models only).

NOTE: Windows includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information.

Performing a recovery

In case of system failure or instability, the computer provides the following tools to recover your files:

- Windows recovery tools: You can use the Backup and Restore to recover information you have previously backed up. You can also use Windows Startup Repair to fix problems that might prevent Windows from starting correctly.
- f11 recovery tools: You can use the f11 recovery tools to recover your original hard drive image. The image includes the Windows operating system and software programs installed at the factory.

NOTE: If you are unable to boot (start up) your computer and you cannot use the system repair discs you previously created (select models only), you must purchase a Windows 7 operating system DVD to reboot the computer and repair the operating system. For additional information, refer to the "Using a Windows 7 operating system DVD (purchased separately)" section in this guide.

Using the Windows recovery tools

To recover information you previously backed up, follow these steps:

1. Click **Start > All Programs > Maintenance > Backup and Restore** .
2. Follow the on-screen instructions to recover your entire computer (select models only) or your files.

NOTE: Windows includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information.

To recover your information using Startup Repair, follow these steps:

CAUTION: Using Startup Repair completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. When reformatting is complete, the recovery process restores the operating system, as well as the drivers, software, and utilities from the backup used for recovery.

1. If possible, back up all personal files.
2. If possible, check for the presence of the Windows partition and the HP Recovery partition.

   To check for the Windows partition, select **Start > Computer**.

   To check for the HP Recovery partition, select **Start**, right-click **Computer**, click **Manage**, and then click **Disk Management**.

   NOTE: If the Windows partition and the HP Recovery partition are not listed, you must recover your operating system and programs usin g the Windows 7 operating system DVD and the *Driver Recovery* disc (both purchased separately). For additional information, refer to the "Using a Windows 7 operating system DVD (purchased separately)" section in this guide.

3. If the Windows partition and the HP Recovery partition are listed, restart the computer, and then press f8 before the Windows operating system loads.
4. Select **Repair your computer**.
5. Follow the on-screen instructions.

NOTE: For additional information on recovering information using the Windows tools, perform a search for these topics in Help and Support.

Using f11

CAUTION: Using f11 completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. The f11 recovery tool reinstalls the operating system and HP programs and drivers that were installed at the factory. Software not installed at the factory must be reinstalled.

To recover the original hard drive image using f11, follow these steps:

1. If possible, back up all personal files.
2. If possible, check for the presence of the HP Recovery partition: Select **Start**, right-click **Computer**, click **Manage**, then click **Disk Management**.

   NOTE: If the HP Recovery partition is not listed, you must recover your operating system and programs using the Windows 7 operating system DVD and the *Driver Recovery* disc (both purchased separately). For additional information, refer to the "Using a Windows 7 operating system DVD (purchased separately)" section in this guide.

3. If the HP Recovery partition is listed, restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.
4. Press f11 to enter HP Recovery.
5. Follow the on-screen instructions.

Using a Windows 7 operating system DVD (purchased separately)

If you are unable to boot (start up) your computer and you cannot use the system repair discs you previously created (select models only) , you must purchase a Windows 7 operating system DVD to reboot the computer and repair the operating system. Make sure that your most recent backup (stored on discs or on an external drive) is easily accessible. To order a Windows 7 operating system DVD, go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions. You can also order the DVD by calling technical support. For contact information, refer to the *Worldwide Telephone Numbers* booklet included with the computer.

CAUTION: Using a Windows 7 operating system DVD completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. When reformatting is complete, the recovery process helps you restore the operating system, as well as drivers, software, and utilities.

To initiate recovery using a Windows 7 operating system DVD, follow these steps:

NOTE: This process takes several minutes.

1. If possible, back up all personal files.
2. Restart the computer, and then insert the Windows 7 operating system DVD into the optical drive before the Windows operating system loads.
3. When prompted, press any keyboard key.

4. Follow the on-screen instructions.
5. Click **Next**.
6. Select **Repair your computer**.
7. Follow the on-screen instructions.

Backup and recovery in Windows Vista

Overview

To protect your information, use Backup and Restore to back up individual files and folders, back up your entire hard drive (select models only), or create system restore points. In case of system failure, you can use the backup files to restore the contents of your computer.

Backup and Restore provides the following options:

- Backing up individual files and folders
- Backing up the entire hard drive (select models only)
- Scheduling automatic backups (select models only)
- Creating system restore points
- Recovering individual files
- Restoring the computer to a previous state
- Recovering information using recovery tools

NOTE: For detailed instructions, perform a search for these topics in Help and Support.

NOTE: In case of system instability, HP recommends that you print the recovery procedures and save them for later use.

Backing up your information

Recovery after a system failure is as complete as your most current backup. You should create your initial backup immediately after software setup. As you add new software and data files, you should continue to back up your system on a regular basis to maintain a reasonably current backup.

You can back up your information to an optional external hard drive, a network drive, or discs.

Note the following when backing up:

- Store personal files in the Documents folder, and back it up regularly.
- Back up templates that are stored in their associated programs.
- Save customized settings that appear in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time-saver if you have to reset your preferences.

To create a screen shot:

1. Display the screen you want to save.
2. Copy the screen image:

   To copy only the active window, press alt+fn+prt sc.

   To copy the entire screen, press fn+prt sc.
3. Open a word-processing document, and then select **Edit > Paste**.

   The screen image is added to the document.
4. Save the document.

- When backing up to discs, use any of the following types of discs (purchased separately): CD-R, CD-RW, DVD+R, DVD+R DL, DVD-R, DVD-R DL, or DVD±RW. The discs you use will depend on the type of optical drive installed in your computer.

NOTE: DVDs and DVDs with double-layer (DL) support store more information than CDs, so using them for backup reduces the number of recovery discs required.

- When backing up to discs, number each disc before inserting it into the optical drive of the computer.

To create a backup using Backup and Restore , follow these steps:

NOTE: Be sure that the computer is connected to AC power before you start the backup process.

NOTE: The backup process may take over an hour, depending on file size and the speed of the computer.

1. Select **Start > All Programs > Maintenance > Backup and Restore**.
2. Follow the on-screen instructions to back up your entire computer (select models only) or your files.

NOTE: Windows includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information.

Performing a recovery

In case of system failure or instability, the computer provides the following tools to recover your files:

- Windows recovery tools: You can use Backup and Restore to recover information you have previously backed up. You can also use Windows Startup Repair to fix problems that might prevent Windows from starting correctly.
- f11 recovery tools: You can use the f11 recovery tools to recover your original hard drive image. The image includes the Windows operating system and software programs installed at the factory.

NOTE: If you are unable to boot (start up) your computer, you must purchase a Windows Vista® operating system DVD to reboot the computer and repair the operating system. For additional information, refer to the "Using a Windows Vista operating system DVD (purchased separately)" section in this guide.

Using the Windows recovery tools

To recover information you previously backed up, follow these steps:

1. Click **Start > All Programs > Maintenance > Backup and Restore**.
2. Follow the on-screen instructions to recover your entire computer (select models only) or your files.

NOTE: Windows includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information.

To recover your information using Startup Repair, follow these steps:

CAUTION: Using Startup Repair completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. When reformatting is complete, the recovery process restores the operating system, as well as the drivers, software, and utilities from the backup used for recovery.

1. If possible, back up all personal files.
2. If possible, check for the presence of the Windows partition and the HP Recovery partition. To find the partitions, select **Start > Computer**.

   NOTE: If the Windows partition and the HP Recovery partition have been deleted, you must recover your operating system and programs using the Windows Vista operating system DVD and the *Driver Recovery* disc (both purchased separately). For additional information, refer to the "Using a Windows Vista operating system DVD (purchased separately)" section in this guide.
3. Restart the computer, and then press f8 before the Windows operating system loads.
4. Select **Repair your computer**.
5. Follow the on-screen instructions.

NOTE: For additional information on recovering information using the Windows tools, perform a search for these topics in Help and Support.

Using f11

CAUTION: Using f11 completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. The f11 recovery tool reinstalls the operating system and HP programs and drivers that were installed at the factory. Software not installed at the factory must be reinstalled.

To recover the original hard drive image using f11, follow these steps:

1. If possible, back up all personal files.
2. If possible, check for the presence of the HP Recovery partition. To find the partition, select **Start > Computer**.

   NOTE: If the HP Recovery partition has been deleted, you must recover your operating system and programs using the Windows Vista operating system DVD and the *Driver Recovery* disc (both purchased separately). For additional information, refer to the "Using a Windows Vista operating system DVD (purchased separately)" section in this guide.

3. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.
4. Press f11 to enter HP Recovery.
5. Follow the on-screen instructions.

Using a Windows Vista operating system DVD (purchased separately)

If you are unable to boot (start up) your computer, you must purchase a Windows Vista operating system DVD to reboot the computer and repair the operating system. Make sure that your most recent backup (stored on discs or on an external drive) is easily accessible. To order a Windows Vista operating system DVD, go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions. You can also order the DVD by calling technical support. For contact information, refer to the *Worldwide Telephone Numbers* booklet included with the computer.

△ **CAUTION:** Using a Windows Vista operating system DVD completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. When reformatting is complete, the recovery process helps you restore the operating system, as well as drivers, software, and utilities.

To initiate recovery using a Windows Vista operating system DVD, follow these steps:

NOTE: This process takes several minutes.

1. If possible, back up all personal files.
2. Restart the computer, and then insert the Windows Vista operating system DVD into the optical drive before the Windows operating system loads.
3. When prompted, press any keyboard key.
4. Follow the on-screen instructions.
5. Click **Next**.
6. Select **Repair your computer**.
7. Follow the on-screen instructions.

Backup and recovery in Windows XP

Overview

To protect your information, use the Windows® Backup utility (select models only) to back up files and folders or create recovery points. In case of system failure, you can use the backup files to restore your computer.

Windows provides the following options:

- Backing up individual files and folders
- Backing up all files and folders
- Scheduling automatic backups
- Creating recovery points
- Recovering information

NOTE: For detailed instructions, perform a search for these topics in Help and Support.

NOTE: In case of system instability, HP recommends that you print the recovery procedures and save them for later use.

Backing up your information

Recovery after a system failure is as complete as your most current backup. You should create your initial backup immediately after software setup. As you add new software and data files, you should continue to back up your system on a regular basis to maintain a reasonably current backup.

You can back up individual files or folders to an optional external hard drive or to a network drive.

Note the following when backing up:

- Store personal files in the My Documents folder, and back it up periodically.
- Back up templates stored in their associated programs.
- Save customized settings that appear in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time saver if you have to reset your preferences.

  To copy the screen and paste it into a word-processing document:

  a. Display the screen you want to save.

  b. Copy the screen image:

  To copy only the active window, press alt+fn+prt sc.

  To copy the entire screen, press fn+prt sc.

  c. Open a word-processing document, click **Edit > Paste**.

The screen image is added to the document.

d. Save the document.

To create a backup using the Windows Backup utility (select models only), follow these steps:

NOTE: Be sure that the computer is connected to AC power before you start the backup process.

NOTE: The backup process may take over an hour, depending on file size and the speed of the computer.

1. Click **Start > All Programs > Accessories > System Tools > Backup**.
2. Follow the on-screen instructions.

Performing a recovery

In case of system failure or instability, the computer provides the following tools to recover your files:

- Windows recovery tools (select models only): You can use the Windows Backup utility to recover information you have previously backed up.
- *Operating System* and *Driver Recovery* discs (included with your computer): You can use the discs to recover your operating system and programs installed at the factory.

Recovering your information

To recover information you previously backed up, follow these steps:

1. If possible, back up all personal files.
2. Click **Start > All Programs > Accessories > System Tools > Backup**.

   The Backup or Restore Wizard opens.
3. Click **Restore files and settings**, and then click **Next**.
4. Follow the on-screen instructions.

NOTE: For additional information on initiating a recovery in Windows, perform a search for this topic in Help and Support.

Recovering the operating system and programs

CAUTION: The recovery process reformats and completely erases the hard drive. All files you have created and any software installed on the computer are permanently removed. The recovery process reinstalls the original operating system, software, and drivers. Software, drivers, and updates not installed by HP must be manually reinstalled.

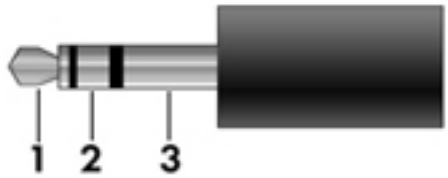
To recover your operating system and programs, follow these steps:

1. If possible, back up all personal files.
2. Insert the *Operating System* disc into the optical drive.
3. Shut down the computer.

4. Turn on the computer.
5. Follow the on-screen instructions to install the operating system.
6. After the operating system is installed, remove the *Operating System* disc and insert the *Driver Recovery* disc.
7. Follow the on-screen instructions to install the drivers and programs.

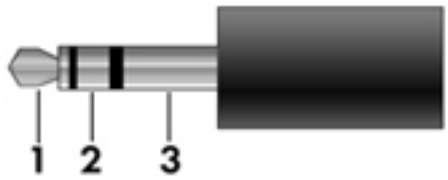
8 Connector pin assignments

Audio-in (microphone)



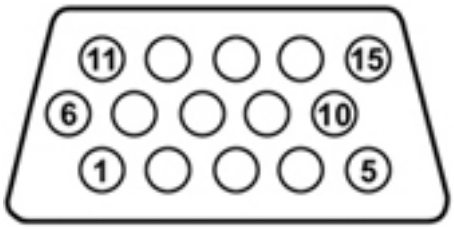
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

Audio-out (headphone)



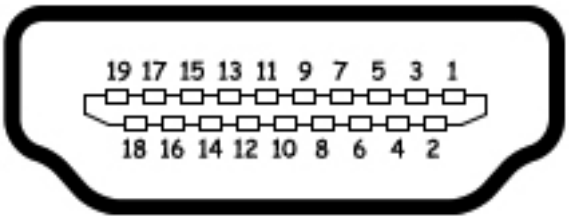
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

External monitor



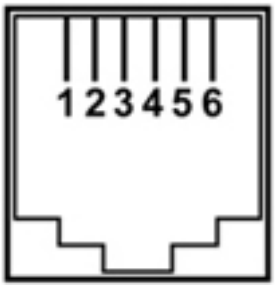
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

HDMI



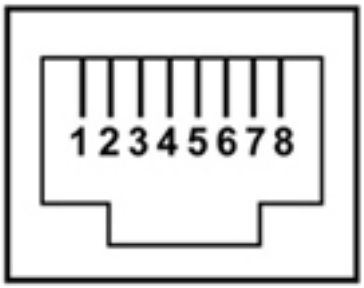
Pin	Signal
1	Transition minimized differential signal (TMDS) data 2+
2	TMDS data 2 shield
3	TMDS data 2–
4	TMDS data 1+
5	TMDS data 1 shield
6	TMDS data 1–
7	TMDS data 0+
8	TMDS data 0 shield
9	TMDS data 0–
10	TMDS clock+
11	TMDS clock shield
12	TMDS clock-
13	Consumer electronic control (CEC)
14	Not connected
15	DDC clock
16	DDC data
17	Ground
18	+5V power
19	Hot plug detect

RJ-11 (modem)



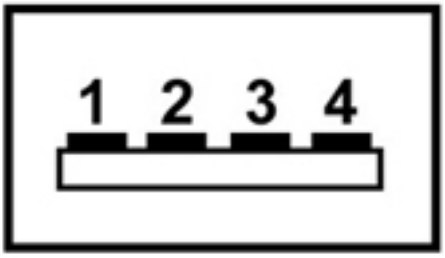
Pin	Signal
1	Unused
2	Tip
3	Ring
4	Unused
5	Unused
6	Unused

RJ-45 (network)



Pin	Signal
1	Transmit +
2	Transmit -
3	Receive +
4	Unused
5	Unused
6	Receive -
7	Unused
8	Unused

Universal Serial Bus



Pin	Signal
1	+5 VDC
2	Data -
3	Data +
4	Ground

9 Power cord set requirements

The wide range input feature of the computer permits it to operate from any line voltage from 100 to 120 volts AC or from 220 to 240 volts AC.

The 3-conductor power cord set included with the computer meets the requirements for use in the country or region where the equipment is purchased.

Power cord sets for use in other countries and regions must meet the requirements of the country or region where the computer is used.

Requirements for all countries and regions

The requirements listed below are applicable to all countries and regions:

- The length of the power cord set must be at least 1.5 m (5.0 ft) and no more than 2.0 m (6.5 ft).
- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region where the power cord set will be used.
- The power cord sets must have a minimum current capacity of 10 amps and a nominal voltage rating of 125 or 250 V AC, as required by the power system of each country or region.
- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

Requirements for specific countries and regions

Country/region	Accredited agency	Applicable note number
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	METI	3
The Netherlands	KEMA	1
Norway	NEMKO	1
The People's Republic of China	CCC	5
South Korea	EK	4
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	4
The United Kingdom	BSI	1
The United States	UL	2

1. The flexible cord must be Type HO5VV-F, 3-conductor, 1.0-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.
3. The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 1.00-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.
4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.
5. The flexible cord must be Type VCTF, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

10 Recycling

Battery

When a battery has reached the end of its useful life, do not dispose of the battery in general household waste. Follow the local laws and regulations in your area for computer battery disposal.

Display

⚠ **WARNING!** The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

⚠ **CAUTION:** The procedures in this chapter can result in damage to display components. The only components intended for recycling purposes are the liquid crystal display (LCD) panel and the backlight. When you remove these components, handle them carefully.

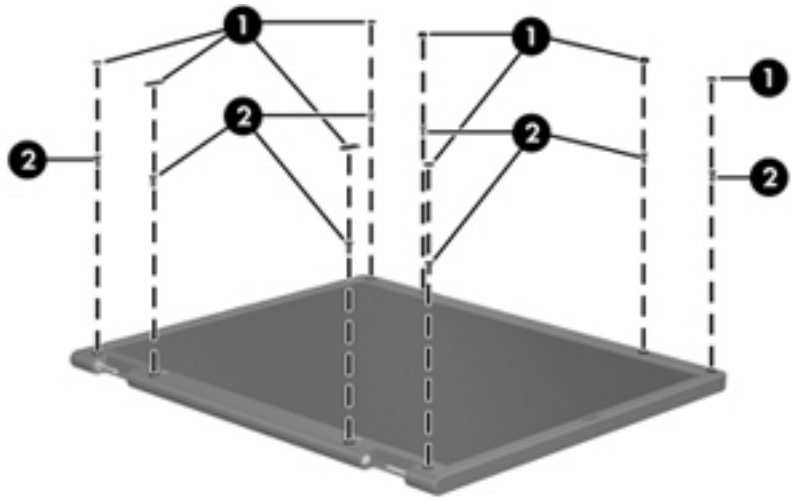
NOTE: **Materials Disposal**. This HP product contains mercury in the backlight in the display assembly that might require special handling at end-of-life. Disposal of mercury may be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities, or see the Electronic Industries Alliance (EIA) Web site at http://www.eiae.org.

This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight **(1)** and the liquid crystal display (LCD) panel **(2)**.

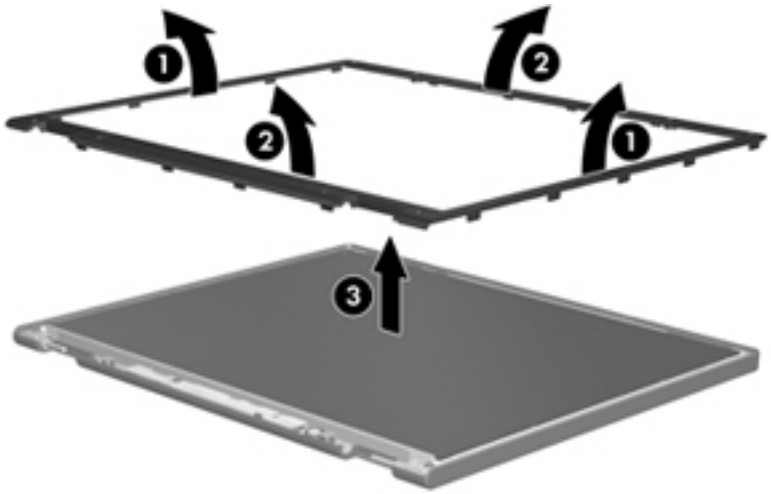
NOTE: The procedures provided in this chapter are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps to disassemble the display assembly:

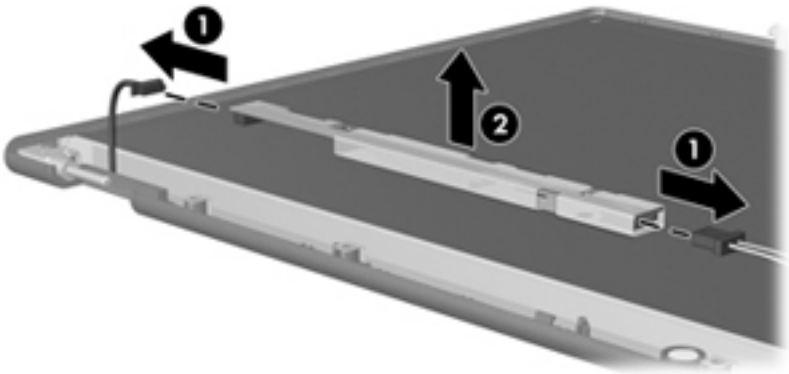
1. Remove all screw covers **(1)** and screws **(2)** that secure the display bezel to the display assembly.



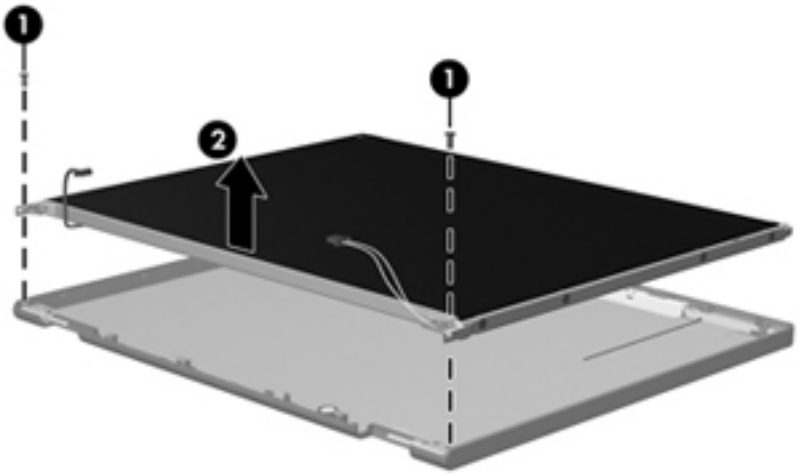
2. Lift up and out on the left and right inside edges **(1)** and the top and bottom inside edges **(2)** of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel **(3)**.



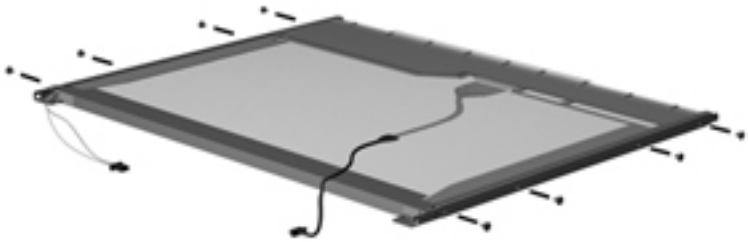
4. Disconnect all display panel cables **(1)** from the display inverter and remove the inverter **(2)**.



5. Remove all screws **(1)** that secure the display panel assembly to the display enclosure.
6. Remove the display panel assembly **(2)** from the display enclosure.

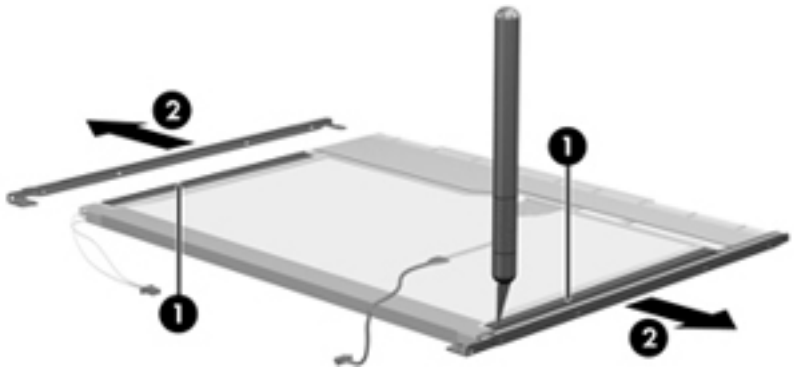


7. Turn the display panel assembly upside-down.
8. Remove all screws that secure the display panel frame to the display panel.

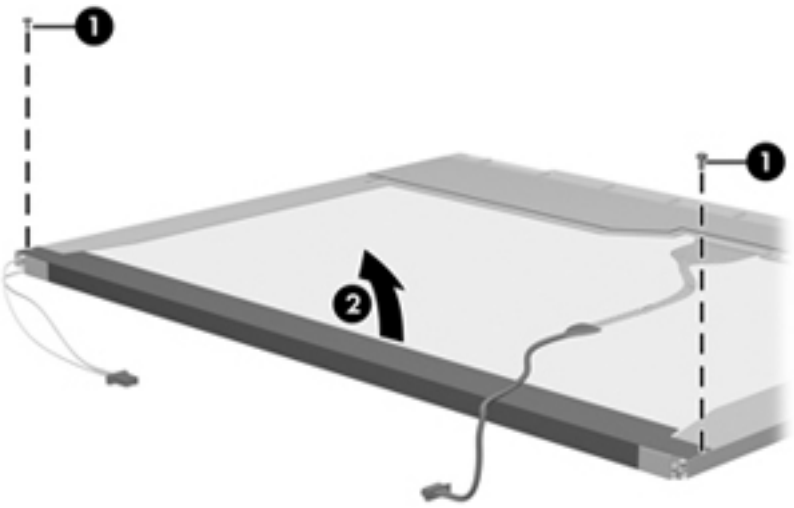


9. Use a sharp-edged tool to cut the tape **(1)** that secures the sides of the display panel to the display panel frame.

10. Remove the display panel frame **(2)** from the display panel.

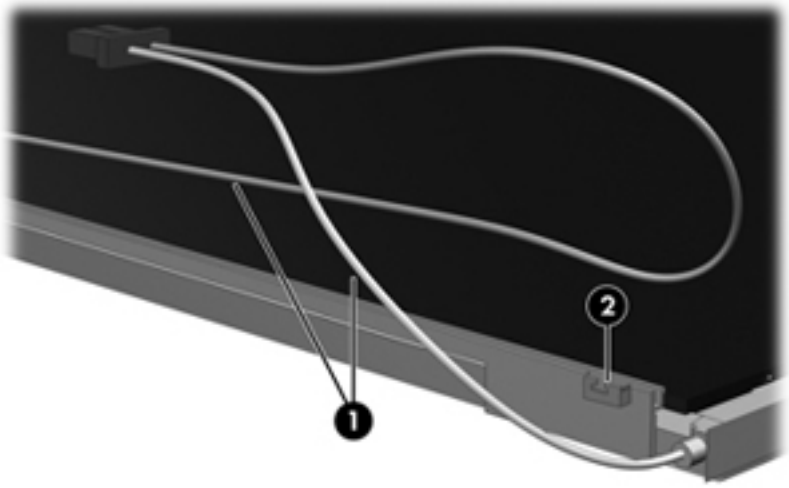


11. Remove the screws **(1)** that secure the backlight cover to the display panel.
12. Lift the top edge of the backlight cover **(2)** and swing it outward.



13. Remove the backlight cover.
14. Turn the display panel right-side up.

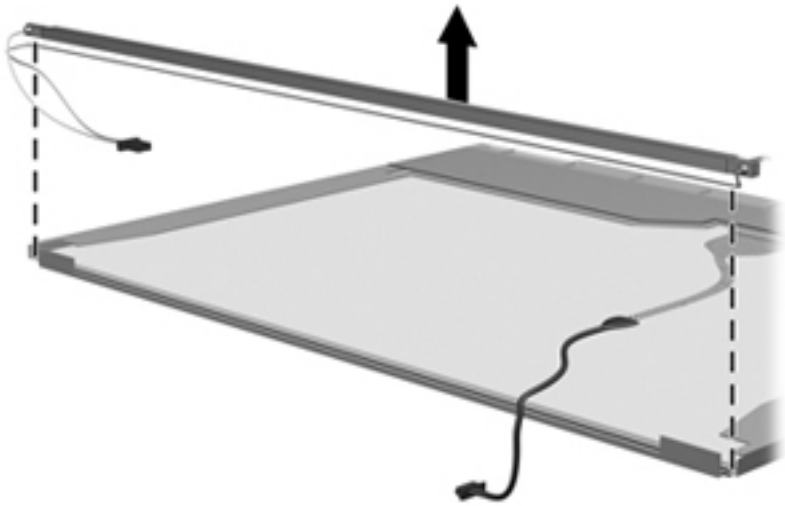
15. Remove the backlight cables **(1)** from the clip **(2)** in the display panel.



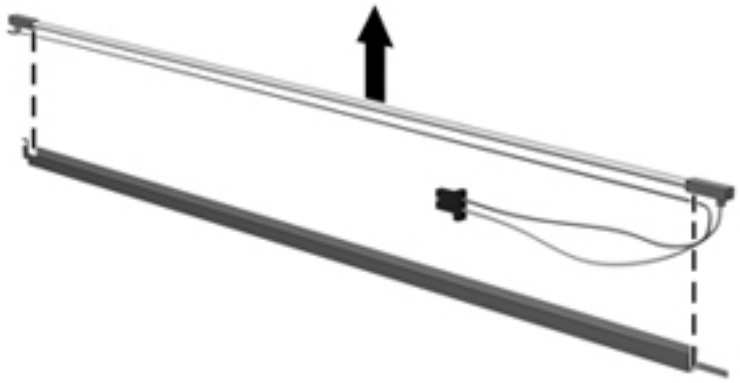
16. Turn the display panel upside-down.

⚠ **WARNING!** The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

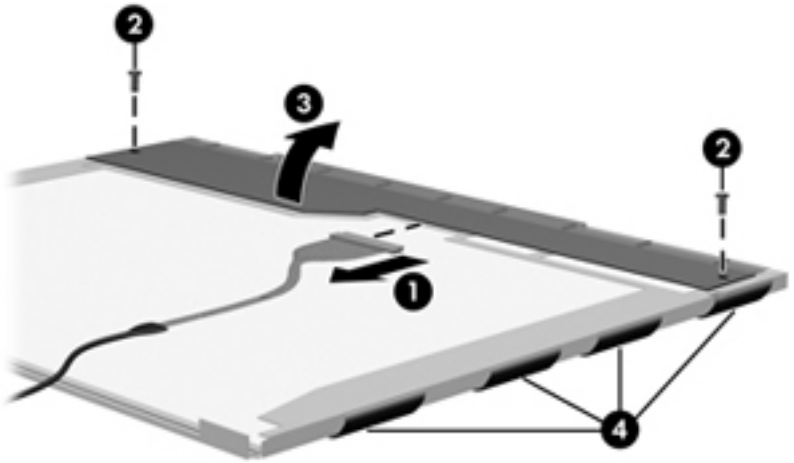
17. Remove the backlight frame from the display panel.



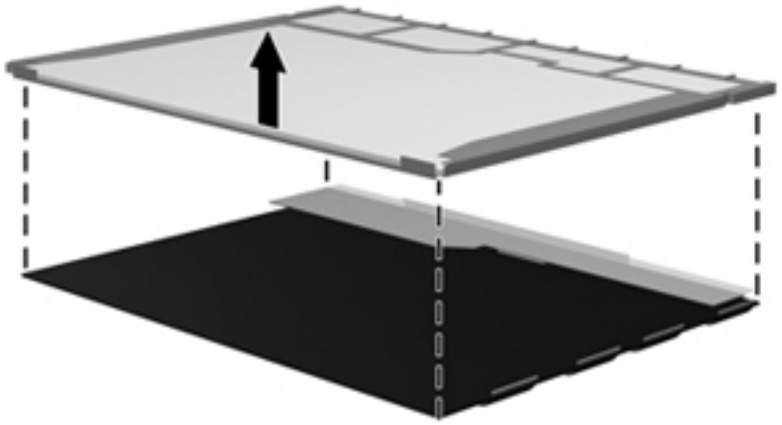
18. Remove the backlight from the backlight frame.



19. Disconnect the display panel cable **(1)** from the LCD panel.
20. Remove the screws **(2)** that secure the LCD panel to the display rear panel.
21. Release the LCD panel **(3)** from the display rear panel.
22. Release the tape **(4)** that secures the LCD panel to the display rear panel.



23. Remove the LCD panel.



24. Recycle the LCD panel and backlight.

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